Prospectus
2023/2024

Faculty of Agriculture
Eastern University, Sri Lanka

UNDERGRADUATE PROSPECTUS

(2023/2024)

FACULTY OF AGRICULTURE

EASTERN UNIVERSITY SRI LANKA

2025

VISION AND MISSION

University Vision

World-class knowledge centre with excellent teaching-learning and research for enhancement of community well-being

University Mission

Producing abled graduates with moral values and enhancing research culture to achieve a sustainable global, national and regional development by creating local and foreign linkages with optimizing the regional resources

Faculty Vision

To be a Centre of Excellence for higher learning and research in Agriculture to meet national and global needs

Faculty Mission

To produce graduates of the highest professional standard contributing towards technology enhancement, dissemination of knowledge and skills and involvement in sustained productivity in the agricultural sector of Sri Lanka

Message from Vice Chancellor

The University serves as a dynamic engine of national and regional development, driven by the integrated pillars of teaching, research, innovation, and community engagement. In today's context, institutions of higher learning are increasingly evaluated by their capacity to generate solutions to real-world challenges through science, evidence-based practices, and interdisciplinary approaches.

The Faculty of Agriculture occupies a uniquely strategic position within this broader mission. Modern agriculture extends far beyond production; it is a complex and evolving system shaped by climate-smart practices, automation, Internet of things (IoT), digitalization, socio-economic dynamics, environmental sustainability, and food security. Addressing these multifaceted challenges requires analytical reasoning, scientific rigor, innovation, and data-driven decision-making principles that lie at the heart of modern university education. Contemporary global challenges such as climate change, resource scarcity, ecosystem degradation, and food insecurity are deeply interconnected. These demands integrated science-based solutions. The Faculty of Agriculture must therefore function not only as a center of learning but also as a hub of research, innovation, and community engagement that extends beyond conventional boundaries. It must nurture graduates who are capable of critical thinking, scientific analysis, technological application, and the design of sustainable solutions to real-world problems.

The curriculum you will undertake is carefully structured to promote inquiry, problem-solving, hands-on training, research engagement, and interdisciplinary learning. It is designed not merely to prepare you for employment, but to equip you for leadership roles in national development. Youth are the architects of the future food system. In a rapidly urbanizing and technologically advancing world, agriculture must be re-envisioned as a knowledge-driven, innovation-oriented, and socially transformative sector. As a university, our responsibility is to empower students with strong intellectual foundations, scientific competence, ethical values, and practical skills necessary to transform agriculture into a resilient, sustainable, and inclusive system. The Faculty of Agriculture at Eastern University, Sri Lanka, is well positioned to play a leading role in this transformation. Your journey here will shape not only your professional identity but also your role as a responsible citizen and contributor to national development.

I congratulate you on your admission to the Faculty of Agriculture. May your time at Eastern University, Sri Lanka, be intellectually enriching, personally transformative, and professionally rewarding. I wish you every success as you grow into competent, ethical, and globally competitive professionals, contributing meaningfully to national development and global sustainability.

Professor P. Peratheepan
Vice-Chancellor
Eastern University, Sri Lanka

Message from Dean

The Faculty of Agriculture is one of the pioneer faculties of Eastern University, Sri Lanka. The Faculty was established in 1986 at Vantharumoolai and shifted to its present location at Palachcholai in 2020. The mission of the Faculty, in line with Government policy to modernize agriculture and eradicate poverty is "to produce men and women of the highest professional standard contributing towards technology enhancement, dissemination of knowledge and skill and involvement in sustained productivity in the Agricultural sector of Sri Lanka". The faculty has six academic departments and 30 acres of farm land for crop and livestock. The staff from these departments and farm are working together efficiently to offer the degree program "Bachelor of Science Honours in Agriculture". The academic programme is offered for eight semesters in four-year duration and is being conducted under a semester-based credit unit system. Considering the importance of English in higher learning and job opportunities, English is the medium of instruction throughout the degree programme.

The Faculty of Agriculture plays a vital role in the upliftment of the socio-economic standards of the predominantly rural population who depend largely on Agriculture.

The curriculum of the Bachelor of Science Honours in Agriculture degree programme is being revised in every 5 years to suit the changing needs of the Agricultural sector and global technological transformations. In revising the curriculum, questioner survey from the senior students, academic staff members of the faculty and the feedback from the stakeholder discussion with the relevant employers, organizations and alumni association of the faculty are being used to comprise the changes in the global agricultural and higher educational scenario. The eight–semester degree programme includes five semesters of core programme and three semesters of advanced programme. The Faculty offers advanced programmes in 6th and 7th semester to provide in depth knowledge and skills in the particular discipline.

The proceeding is a collection of all the information that could potentially be useful to cater the faculty students and staff regarding their academic activities. This is an accessible and comprehensive summary of the most relevant and important regulations, opportunities, policies, and procedures that may impact your efforts. It has been prepared by the curriculum committee of the Faculty and it composed exclusively of reliable documents: including sections of the Faculty curriculum, Constitution, By-Laws, and Rules of Procedures. The Faculty proceeding is a resource that contains information relevant to faculty and academic administrators at the faculty of Agriculture.

Professor (Mrs.) Punitha Premanadarajah
Dean/Faculty of Agriculture

Contents

VISION AND MISSION i
Message from Vice Chancellor ii
Message from Dean iii
Contents iv
1.0 Introduction 1
1.1 Eastern University, Sri Lanka 1
1.2 Faculty of Agriculture 2
1.2.1 History 2
1.2.2 Organizational Structure 4
1.2.3 Officers of the Faculty of Agriculture 5
1.2.4 Academic Staff of the Departments 6
1.2.5 Composition of the Faculty Board 9
1.2.6 Linkages and Services 10
1.2.7 Publications 10
2.0 Admission of Students to the Faculty of Agriculture 11
2.1 Admission Requirements 11
2.2 Registration, Re-registration and Studentship 11
2.3 Student Identity Card and Record Book 12
2.4 Subject Registration 12
2.5 Cancellations of the Programme 12
2.6 Deferment of the Programme 12
2.7 Students Guidance 13
2.7.1 Senior Student Counsellor 13
2.7.2 Student Services and Welfare Division 14
2.7.3 Student Counsellor 15
2.7.4 Academic Mentors 15
3.0 Description of Degree Programmes 16
3.1 Introduction 16
3.1.1 Semester System 16
3.2 Programme Outcomes Aligned to Graduate Profile 16
3.2.1 Bachelor of Science Honours in Agriculture 16
3.2.1.1 Objectives of the Degree Programme 16
3.2.1.2 Graduate Profile 17

3.3 Credit Value 17
3.3.1 Structure of the Degree Programme 18
3.4 Introduction to Course Units 18
3.4.1 Course Code 18
3.4.2 Abbreviations used in the Departments of Study 19
3.4.3 Credited Common Courses 19
3.4.4 Non-Gradial Courses 19
3.4.5 Audit Courses 19
3.4.6 Hands-on Experience 20
3.4.7 Industrial Training 20
3.5 Principle Subject Area 20
3.5.1 Bachelor of Science Honours in Agriculture Degree 20
3.5.1.1 Principle Subject Areas Offered During Core Programme 20
3.5.1.2 Principle Subject Areas in the Advanced Programme 22
3.6 Other Courses 22
3.6.1 Core Programme 22
3.6.1.1 Enhancement Courses 22
3.6.1.2 Auxiliary Courses 23
3.6.2 Advanced Programme 23
3.6.2.1 Enhancement Courses 23
3.6.2.2 Auxiliary Courses 24
3.7 Curriculum Map 25
3.8 Curriculum Matrix 39
4.0 Examinations and Evaluation 41
4.1 Examinations 41
4.1.1 Types of Examination 41
4.1.1.1 Theory Component of the Credited Course 41
4.1.1.1.1 Continuous Assessment 41
4.1.1.1.2 End Semester Assessment 41
4.1.1.2 Practical Component of the Credited Course 41
4.1.1.3 Duration and allocated marks of the Examination 42
4.1.1.4 Independent Learning (IL) 42
4.1.1.5 Non-Gradial Courses (NGC) 42
4.1.1.6 Career Development Modules 43
4.1.1.7 Industrial Training 43

4.1.1.8 Audit Course 43
4.1.1.9 Research Project 43
4.1.2 Eligibility for Examination 44
4.1.3 Application Procedure 44
4.1.4 Absence from Examinations 44
4.1.5 Prerequisites to enter the Third Year of the degree programme 45
4.2 Evaluation 45
4.2.1 Grade and Grade Points 45
4.2.2 Grade Point Average (GPA) 46
4.2.3 Passing of a Course 46
4.2.4 Repetition of a Course Unit 46
4.3 Award of Degree 47
4.4 Award of Class 47
4.5 Award of Other Qualifications 47
4.5.1 Fallback Options 47
4.5.1.1 Award of Diploma in Agriculture (SLQF Level 3) 48
4.5.1.2 Award of Higher Diploma in Agriculture (SLQF Level 4) 48
4.6 Effective Date of the Degree 48
5.0 Course Specification 49
5.1 Bachelor of Science Honours in Agriculture Degree 49
5.1.1 Principle Subjects of the Core Programme 49
5.1.1.1 Subjects Offered by the Department of Agricultural Biology 49
5.1.1.2 Subjects Offered by the Department of Agricultural Chemistry 52
5.1.1.3 Subjects Offered by the Department of Agricultural Economics 54
5.1.1.4 Subjects Offered by the Department of Agricultural Engineering 55
5.1.1.5 Subjects Offered by the Department of Animal Science 58
5.1.1.6 Subjects Offered by the Department of Crop Science 61
5.1.2 Principle Subjects During Advanced Programme 63
5.1.2.1 Subjects Offered by the Department of Agricultural Biology 63
5.1.2.2 Subjects Offered by the Department of Agricultural Chemistry 71
5.1.2.3 Subjects Offered by the Department of Agricultural Economics 77
5.1.2.4 Subjects Offered by the Department of Agricultural Engineering 81
5.1.2.5 Subjects Offered by the Department of Animal Science 89
5.1.2.6 Subjects Offered by the Department of Crop Science 96
5.2 Other Courses 101

5.2.1 Courses Offered During Core Programme 101
5.2.1.1 Enhancement Courses 101
5.2.1.2 Auxiliary Courses 103
5.2.2 Courses Offered During Advanced Programme 103
5.2.2.1 Enhancement Courses 103
5.2.2.2 Auxiliary Courses 105
6.0 Additional Facilities 106
6.1 The Library 106
6.2 The Department of English Language Teaching (DELT) 106
6.3 Centre for Information and Communication Technology (CICT) 107
6.4 Career Guidance Unit (CGU) 107
6.5 Students' Hostel 108
6.6 University Health Centre 109
6.7 Physical Education (Sports and Facilities) 109
6.8 Financial Assistance 109
6.9 Banking Facilities 110
6.10 Cafeteria Service (Canteen) 110
6.11 Annual Research Session (ARS) / Research Symposium 110
6.12 University Business Linkages (UBL) Cell 110
6.13 Center for Industry Community Linkage (CICL) 110
6.14 International Affairs Division (IAD) 111
6.15 Center for Multidisciplinary Research (CMR) 111
6.16 Center for External Degree and Extension Courses (CEDEC) 112
6.17 Center for Social Cohesion and Reconciliation 112
6.18 Gender Equity and Equality Cell, Faculty of Agriculture 113
6.19 Committees of the Faculty 114
6.19.1. Faculty Quality Assurance Cell 114
6.19.2. Faculty Curriculum Development Committee 114
6.19.3. Faculty Timetable Committee 115
6.19.4. Faculty Development Committee 115
6.19.5. Faculty Farm Development Committee 115
6.19.6. Faculty Research Committee 115
6.19.7. Faculty Students' Union 115
7.0 Examination Rules, Offences, Punishments and Legal Procedures 117
7.1 Examination Rules 117

7.2 Examination Offences and Punishments 120
7.3 Legal Procedures for Violation of Examination Rules 121
7.4 Appeals Board 122
8.0 Memorial Awards 123
9.0 Road Map 124

1.0 Introduction

1.1 Eastern University, Sri Lanka

The Eastern University, Sri Lanka was established on the 1st October 1986 by a University Order dated 26th September 1986 issued under Section 2 of the Universities Act No: 16 of 1978. The University was preceded by the Batticaloa University College, established on the 1st August 1981 to fulfill the long-felt need for the development of the Higher Educational Institutions in the Eastern Province of Sri Lanka. The Batticaloa University College began with two Faculties: The Faculty of Agriculture and the Faculty of Science, both of these faculties were affiliated with the University of Peradeniya. In October 1986, the Batticaloa University College was elevated to the status of a University under the name of Eastern University, Sri Lanka. Two new Faculties, the Faculty of Commerce and Management and the Faculty of Cultural Studies, were established in 1988. The Faculty of Cultural Studies was then expanded and renamed as the Faculty of Arts and Culture in 1991. In 2005, the Faculty of Health Care Sciences was established in the University and located in Batticaloa town. A campus of the Eastern University functions at Trincomalee with the Faculties of Applied Sciences and Communication and Business Studies. The Swami Vipulananda College of Music and Dance was established in 1981 and was subsequently handed over to the Eastern University in 2001. The SVCMD was then converted to a separate Institute and renamed as Swami Vipulananda Institute of Aesthetics Studies (SVIAS), offering degree programmes in Music and Dance. The Faculty of Technology was started in 2014 as the sixth faculty of Eastern University, Sri Lanka.

Officers of the Eastern University, Sri Lanka

Vice Chancellor	**Prof. P. Peratheepan** (AMIPM-SL) PhD (Johannesburg, South Africa), MSc (PGIS, UPDN), BScHons (EUSL)
Registrar	**Mr. A. Pahirathan** BCom, MBA
Bursar	**Mr. M. M. Mohamed Fareez** BBA (Hon), ACMA (UK), CGMA (USA), ACMA (SL)
Librarian	**Dr. W. J. Jeyaraj** Librarian PhD, BAHons, PGDip (Edu), MEd, MLSc, ALA

1.2 Faculty of Agriculture

1.2.1 History

The Faculty of Agriculture is one of the oldest Faculties of the Eastern University located at Vantharumoolai, Chenkalady, until shifting to a new location at Palachcholai, Kaluwankerny on 1st July 2020. During its entire history, the faculty has maintained uninterrupted, intense and sustained activities committed to the course of promoting the application of Agricultural Science for the benefit of the nation and the region as well. The faculty comprises six Departments, over 30 academic staff and around 250 students. Over 80% of academic staff have been trained to the level of PhD is the strength of the faculty to offer various degree programmes. The faculty at present offers a Bachelor of Science Honours in Agriculture degree programme. In addition, the faculty offers a number of postgraduate degrees, MSc in Agriculture, MSc in Food Processing Technology *etc.* There are opportunities for students to do research-oriented M.Phil and PhD degree programmes under the supervision of the senior academics in the faculty. The faculty and the staff have established strong links with both Sri Lankan and Foreign Organizations through various collaborative research programmes. Several members of the faculty academic staff have been awarded national and international awards for their contribution to scientific research and development. Several members serve as research consultants and board members in many Governmental and Non-Governmental organizations.

With the significant contribution to strengthening the higher education in Agriculture in the University system, the Faculty of Agriculture of the Eastern University developed a full-fledged Faculty with Departments, namely Agricultural Biology, Agricultural Chemistry, Agricultural Economics, Agricultural Engineering, Animal Science and Crop Science. The faculty has a well-established Crop and Livestock farm, about 24 acres in extent, for teaching and research purposes and for the issue of planting materials, livestock products and breeding stock of farm animals to the public. The faculty farm also provides beneficial effects to uplift the knowledge in the farming activities of the farmers in the Eastern Province to favor the dissemination of knowledge. The faculty is expected to serve as a catalyst for the agricultural and socio-economic development of the region. The agriculture education offered and the agricultural research pursued by the faculty to cater the special needs of the region as indicated by the specific agro-climatic zone of the country. Therefore, the Faculty of Agriculture plays a vital role in uplifting the socio-economic standards of the predominantly rural population who depend largely on Agriculture.

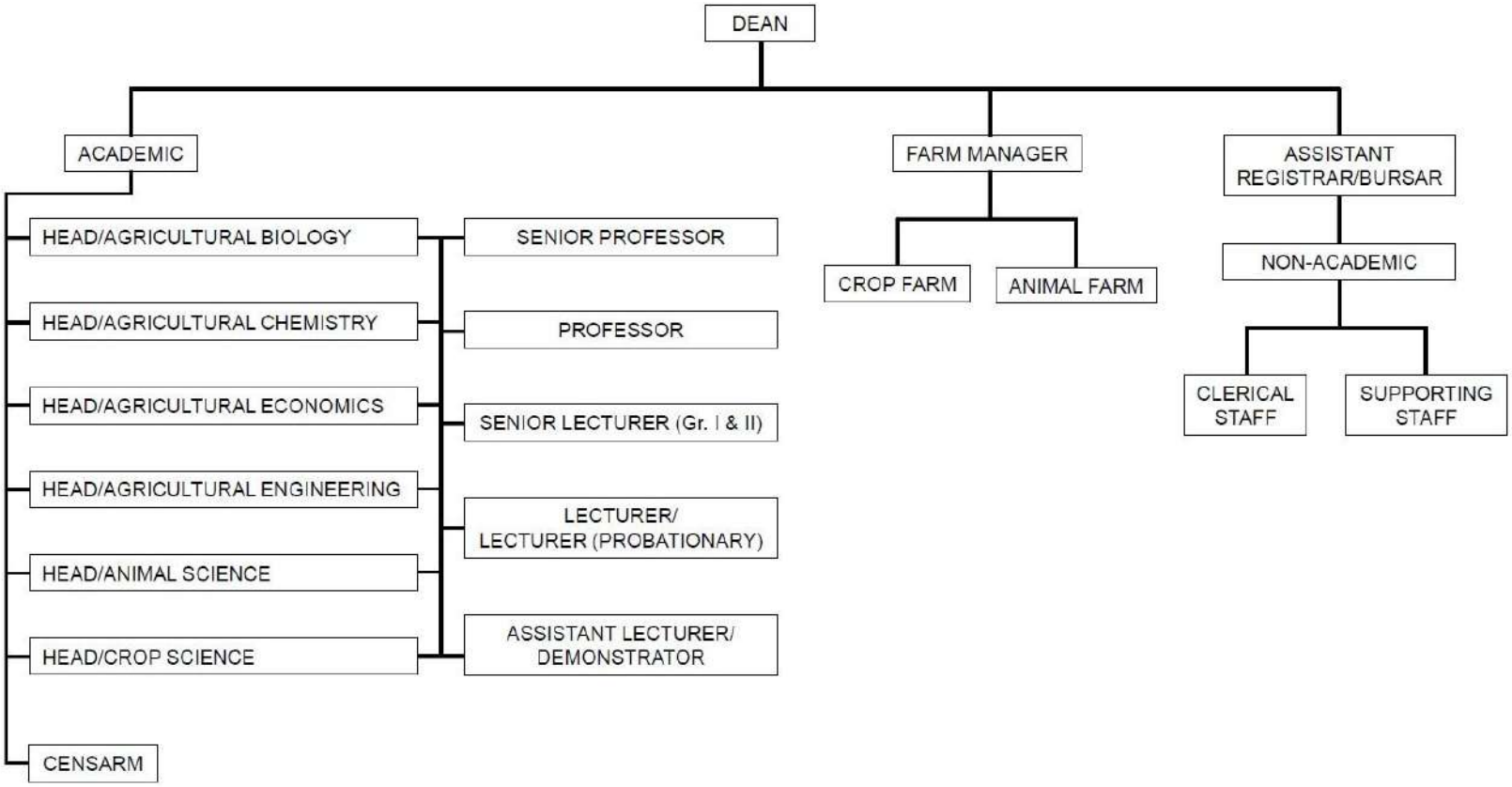
In 2005, the faculty was granted Rs. 78 million from World Bank through a competitive grant to Improve Relevance and Quality of Undergraduate Education (IRQUE). The grant facilitated the faculty with Hi-Tech equipment and four academic staff to train up to the Ph.D. level. In 2012, the University won another competitive World Bank project to improve Higher Education in the Twenty-First Century (HETC). Few academic staff of the faculty benefitted from this project to train up to MPhil or PhD level. The project enhanced the employability of graduates

through the improvement of soft skills, English language, Information Technology, etc.

The faculty received the Accelerating Higher Education Expansion and Development Operation (AHEAD) grant in 2019 as a competitive grant of LKR 100 million. Meanwhile, the Department of Animal Science won another competitive grant of LKR 15 million under the Department Development Projects of AHEAD grant. The undergraduates of the Faculty of Agriculture benefit from these grants. They will get good job opportunities as the grants provide the room to incorporate specific extra-curricular courses urged by employers.

In 2020, the Quality Assurance Council of the University Grants Commission conducted a Programme Review and offered an 'A' grade to the BSc in Agriculture degree programme of the faculty. This is the most outstanding achievement of the faculty.

1.2.2 Organizational Structure



1.2.3 Officers of the Faculty of Agriculture

Dean	**Prof. (Mrs.) Punitha Premanandarajah** BScHons (Agric) (EUSL), MPhil (UPDN), PhD (TNAU, India)
Assistant Registrar	**Mr. A. Hisnathas** BBA (EUSL), MBA (SEUSL)

Heads of Departments

Agricultural Biology	**Prof. K. Prasannath** BScHons (Agric) (EUSL) MPhil (UPDN) PhD (UQ, Australia)
Agricultural Chemistry	**Mrs. Amuthenie Sugirtharan** BScHons (Agric) & MSc (EUSL)
Agricultural Economics	**Dr. (Mrs.) Krishnal Thirumarpan** BScHons (Agric) (EUSL), MSc (UPDN) MPhil (UPDN), PhD (UOR, UK)
Agricultural Engineering	**Prof. M. Sugirtharan** BScHons (Agric) (EUSL), MSc (MPKV, India) PhD (UPDN)
Animal Science	**Dr. M. S. Mohamed Nafees** BScHons (Agric) (EUSL), MPhil (UPDN) PhD (UPM, Malaysia)
Crop Science	**Snr. Prof. S. Sutharsan** BScHons (Agric) (EUSL) MSc Agric., D. Agric. (Japan)

1.2.4 Academic Staff of the Departments

Department of Agricultural Biology

Prof. (Mrs.) Niranjana Rodney Fernando	**BScHons (Agric)** (EUSL) **MPhil** (UPDN) **PhD** (TNAU, India)	Professor in Agricultural Entomology	Agricultural Entomology
Prof. K. Prasannath	**BScHons (Agric)** (EUSL) **MPhil** (UPDN) **PhD** (UQ, Australia)	Professor in Agricultural Biology	Plant Pathology
Dr. T.M.S. Asanka Tennakoon	**BScHons (Agric)** & **PhD** (RUH)	Senior Lecturer Gr.II	Plant Physiology
Mrs. Nishanthi Vathshalyan	**BScHons (Agric)** (EUSL) **MSc** (UPDN)	Lecturer (Probationary)	
Mr. G. Hariharan	**BScHons (Agric)** (EUSL) **MSc** (UPDN)	Lecturer (Probationary)	
Ms. S. Keerthika	**BScHons (Agric)** (EUSL)	Lecturer (Probationary)	

Department of Agricultural Chemistry

Snr. Prof. (Mrs) Thevaki Mahendran	**BScHons (Agric)** (UPDN) **PhD** (UOR, UK)	Senior Professor	Food Processing & Preservation
Prof. (Mrs) Punitha Premanandarajah	**BScHons (Agric)** (EUSL) **MPhil** (UPDN) **PhD** (TNAU, India)	Professor	Soil Fertility & Plant Nutrition
Mrs. Amuthenie Sugirtharan	**BScHons (Agric) & M.Sc.** (EUSL)	Lecturer	Human Nutrition
Ms. R. Krishnananthy	**BScHons (Agric)** (EUSL)	Lecturer (Probationary)	

Department of Agricultural Economics

Dr. (Mrs.) Thivahary Geretharan	**BScHons (Agric)** (EUSL) **MPhil** (UPDN) **PhD** (MU, New Zealand)	Senior Lecturer Gr.I	Agricultural Extension and Rural Development
Dr. (Mrs.) Krishnal Thirumarpan	**BScHons (Agric)** (EUSL) **MSc** (UPDN) **MPhil** (UPDN) **PhD** (UOR, UK)	Senior Lecturer Gr.I	Resource and Environmental Economics & Agribusiness Management
Mrs.Tharsinithevy Kirupananthan	**BScHons (Agric)** (EUSL) **MSc** (CMU, Thailand)	Senior Lecturer Gr.I	Agricultural Economics

Department of Agricultural Engineering

Prof. M. Sugirtharan	**BScHons (Agric)** (EUSL) **MSc** (MPKV, India) **PhD** (UPDN)	Professor in Agricultural Engineering	Irrigation & Water Management
Mr. R. Thivyatharsan	**BScHons (Agric)** (EUSL) **MPhil** (UPDN)	Senior Lecturer Gr.I	Environmental Engineering
Dr. (Mrs.) B. Raveendrakumaran	**BScHons (Agric)** (EUSL) **MPhil** (UPDN) **PhD** (MU, New Zealand)	Senior Lecturer Gr.I	Farm Mechanization & Process Engineering
Mr. M. Rajendran	**BScHons (Agric)** (EUSL) **MPhil** (UPDN)	Senior Lecturer Gr.II	Water Resource Engineering
Mrs. E. Delina J. Prince	**BScHons (Agric)** (EUSL) **MSc & MPhil** (UPDN)	Senior Lecturer Gr.II	Geospatial Technology
Mr. G. Niroash	**BScHons (Agric)** (EUSL) **MSc** (UPDN)	Lecturer (Probationary)	

Department of Animal Science

Prof. M. Pagthinathan	**BVSc & MPhil** (UPDN) **PhD** (UPM, Malaysia)	Professor in Animal Science	Animal Health Care, Reproductive Physiology, & Dairy Technology
Dr. M.S. Mohamed Nafees	**BScHons (Agric)** (EUSL) **MPhil** (UPDN) **PhD** (UPM, Malaysia)	Senior Lecturer Gr.I	Aquaculture Nutrition & Aquatic Bio-Resources Management
Dr. A. Mohamed Jiffry	**BVSc & MSc** (UPDN) **PhD** (Japan)	Senior Lecturer Gr.II	
Mr. S.T.D. De Silva	**BScHons (Agric)** (RUH) **MSc** (UPDN)	Lecturer (Probationary)	
Mrs. Vanajah Liyinthan	**BScHons (Agric) & MSc** (EUSL)	Lecturer (Probationary)	

Department of Crop Science

Snr. Prof. (Mrs) Thayamini H. Seran	**BScHons (Agric)** (EUSL) **MSc & PhD** (CBO)	Senior Professor	Horticulture & Plant Biotechnology
Snr. Prof. S. Sutharsan	**BScHons (Agric)** (EUSL) **MSc & D. Agric** (NU, Japan)	Senior Professor	Agronomy & Sustainable Agriculture
Mr. S. Srikrishnah	**BScHons (Agric)** (EUSL) **MPhil** (UPDN)	Senior Lecturer Gr.I	Floriculture & Landscape, Protected Agriculture
Dr. T. Geretharan	**BScHons (Agric)** (EUSL) **MSc & MPhil (**UPDN) **PhD** (MU, New Zealand)	Senior Lecturer Gr.I	Crop Ecology, Agroforestry & Weed Management
Mrs. Brintha Karunarathna	**BScHons (Agric)** (EUSL) **MPhil** (UPDN)	Senior Lecturer Gr.I	Biostatistics
Ms. S Anula	**BScHons (Agric)** (EUSL)	Lecturer (Probationary)	

1.2.5 Composition of the Faculty Board

Dean of the Faculty

Prof. (Mrs.) P. Premanandarajah

Heads of the Department

Snr. Prof. S. Sutharsan	Crop Science
Prof. M. Sugirtharan	Agricultural Engineering
Prof. K. Prasannath	Agricultural Biology
Dr. (Mrs.) Krishnal Thirumarpan	Agricultural Economics
Dr. M.S. Mohamed Nafees	Animal Science
Mrs. Amuthenie Sugirtharan	Agricultural Chemistry

Senior Professor

Snr. Prof. (Mrs.) Thevaki Mahendran

Professors

Prof. M. Pagthinathan
Prof (Mrs.). N. Rodney Fernando

Senior Lecturers - Grade I

Dr (Mrs.) T. Geretharan
Mr. R. Thivyatharsan
Mrs. T. Kirupananthan
Mr. S. Srikrishnah
Dr. T. Geretharan

Senior Lecturer - Grade II

Mrs. E. J. D. Prince
Dr. T.M.S.A. Tennakoon
Dr. A. Mohamed Jiffry

Two members elected from the Probationary Lecturers

Mrs. K. Arunothayan
Mrs. A. Mayuraj

Appointed Members

Ms. M. Parasuraman
Mr. R. Sivanesan

Two Student Representatives

Mr. G. A. C. Roshan Senarathna
Ms. A. M. Wijeweera

Assistant Registrar - Convener

Mr. A. Hisnathas

1.2.6 Linkages and Services

The Faculty of Agriculture, Eastern University, Sri Lanka, officially signed a Memorandum of Understanding with the Hector Kobbekaduwa Agrarian Research and Training Institute [HARTI] on the 8th of August, 2022. The HARTI under the Ministry of Agriculture is the apex body of agrarian research and training, policy formulation in the agrarian sector and monitoring and evaluation of policy implementation. The linkage was made for mutually beneficial academic and scientific cooperation. It aims to understand academic and scientific cooperation between the Hector Kobbekaduwa Agrarian Research and Training Institute and the Faculty of Agriculture, Eastern University, Sri Lanka, through an agreed strategy to optimize the mutuality of purpose. The areas of mutual support and ownership include: education programs, research programs, research and/or training projects, expert knowledge, physical resources, scientific, academic, education or training discussions, advocacy, and innovation and intellectual property.

1.2.7 Publications

Journal – AGRIEAST

The **AGRIEAST** is an academic peer reviewed journal of Agriculture. This journal publishes research information of broad practical significance pertaining to both tropical and subtropical Agriculture. It is being published biannually as each issue in June and December.

Newsletter

The faculty publishes a newsletter annually including the achievements of staff and the students, community services, etc.

2.0 Admission of Students to the Faculty of Agriculture

2.1 Admission Requirements

Bachelor of Science Honours in Agriculture Degree

a. General admission by University Grants Commission (UGC)

According to the UGC admission policy, students will be admitted to the faculty.

b. Special admission

Every academic year, 10 % of the enrolled students or a maximum of 10 students, whichever more minor in the particular academic year, will be enrolled through lateral entry to the Bachelor of Science Honours in Agriculture Degree programme. Permanent employees in the agricultural sector of government institutions who satisfy the requirements mentioned below are eligible to sit the entrance examination conducted by the faculty.

a. Completed a two-year Diploma in Agriculture or Animal Production (NVQ 6/SLQF 4) from any School of Agriculture of the Department of Agriculture, Aquinas University College, Hardy Institute of Technical Training at Amparai, Affiliated University College, National College of Education with the main subject as Agriculture or an equivalent from any other recognized institution approved by the Ministry of Higher Education or University Grants Commission.

b. **G.C.E. (O/L):** Passes six subjects in one sitting with four credit passes, including Science and Mathematics.

c. **G.C.E. (A/L):** Passes at least three subjects, Biology, Botany, Zoology, Chemistry, Physics, Geography, and Agriculture, in one attempt.

d. **Experience:** After passing the Diploma in Agriculture or Animal Production, five years of working experience (on the closing date of application) in any government or private sector in the Agriculture/Animal Production fields. This requirement does not apply to Diploma holders from the former Affiliated University Colleges.

e. **Age Limit**: Shall be below 45 years of age on the closing date of the application.

2.2 Registration, Re-registration and Studentship

The Eastern University shall register the new students on a date determined by the faculty upon the receipt of the list of selected students from the UGC. The stipulated

time period and the maximum period needed to complete a degree programme shall commence from the registration date.

All students are required to renew their studentship each academic year by paying the appropriate fees and duly filling the re-registration form issued by the faculty.

2.3 Student Identity Card and Record Book

The Student Affairs Department of the University issues student Identity Cards (ID) after the submission of photographs and all necessary details by registered students.

The Faculty of Agriculture issues the student record books when students are successfully registered at the faculty.

2.4 Subject Registration

The students must do the online subject registration through the Management Information System (MIS) at the commencement of each academic year and submit the duly filled Student Record Book for Faculty Endorsement at the Dean's Office.

2.5 Cancellations of the Programme

In order to transfer from Eastern University to another university or from another university to Eastern University, the recommendation of the Deans of the respective universities and the approval of the UGC are required.

2.6 Deferment of the Programme

The new students, after registering for the degree program and before commencing the academic programs, shall be allowed deferments on a case-by-case basis.

Deferment on Medical Grounds:

Deferments on medical grounds shall be allowed during all academic years. The period of deferments allowed under medicals approved by the Medical Officer (MO)/Medical Board shall be excluded from computing the stipulated time period. A student under this category shall be eligible for a class if the degree is completed within the stipulated time period. The period of such leave shall be included in calculating the maximum time period to complete a degree.

Deferment on Other Grounds:

Deferments on other grounds shall be allowed for up to three years. The period of deferments allowed under this category shall be excluded from computing the stipulated time period to complete a degree. A student under this category shall not

be eligible for a class if the degree is completed within the stipulated time period. The period of such leave shall be included in calculating the maximum time period to complete a degree.

All requests for deferments shall be made with valid evidence.

2.7 Students Guidance

2.7.1 Senior Student Counsellor

The Senior Student Counsellors' Office at Eastern University is aimed at extending services to the student community to resolve their academic, welfare, psychological and personal problems. In order to accomplish this task, student counsellors (both male and female) have been appointed in every faculty, and all of them will be available during the working days. Students are free to meet the student counsellor in the respective faculty and then to meet the senior student counsellor in his office. (at present, the office of the senior student counsellor is established next to the student affairs department) All information received from the students would be kept confidential, and if necessary, the office of the senior student counsellor would facilitate the students to get advice from a psychiatrist, psychologist, or psychological advisers.

Objectives:

- To facilitate the student community for a conducive mindset learning environment.
- To keep inform to the students the availability of infrastructure facilities in the university.
- To disseminate salient features of the code of conduct among the student community.
- To enunciate the students of the availability of scholarship, financial assistance and student awards.
- To emphasize the importance of peer harmony among the student community.
- To facilitate the interrelationship between the student community and the University community.
- To promote mutual understanding and social cohesion between students and the community.

Further, Student Counsellors are available in each and every faculty to guide students at any time of need. Students have been given the liberty either to meet or contact any counsellor across Departments and Faculties over the phone, via email, social media, or to personally meet them to express their grievances, and all the information would be treated as confidential by the student counsellors.

Students could also make an appointment to meet the Senior Student Counsellor through the student counsellor of the faculty concerned. Further, the students can lodge their complaints or suggestions to the senior student counsellor by logging into the website of the office of the Senior Student Counsellor. Hence, that at present the office of the senior Student counsellor is located next to the student affairs branch in the administrative buildings site.

Contact Details:

Office of the Senior Student Counsellor
Eastern University, Sri Lanka.
Phone: 065-2240490
e-mail: ssc@esn.ac.lk

2.7.2 Student Services and Welfare Division

In the administrative structure of EUSL, a division under the Student Affairs Department named "Student Services and Welfare" has been established, aimed at providing access to welfare needs to the students. Under the above-mentioned department, the following activities are being carried out.

- Handling all matters pertaining to student accommodation.
- Handling matters with regard to providing financial assistance to students. (Mahapola Scholarship, Bursary and other endowments).
- Coordinating matters relating to health care, recreation, physical education and sports activities of students in liaison with the University Medical Officer, Director Physical Education, Director Welfare, etc.
- Coordinating matters relating to students' welfare and counselling in liaison with the Director of Student Support Services &Welfare and the Senior Students Counsellor.
- Handling matters about student discipline in liaison with the Director of Student Support Services &Welfare and Chief Marshall.
- Handling all matters about student unions and associations.
- Assisting the General Administration Department in the Maintenance of Hostels and Canteens.
- Convening the meetings of the Board of Discipline and the Advisory Board of Student Welfare, and follow-up work.
- Coordinating all undergraduate student admission matters in liaison with the Faculties and the UGC (student registration is to be handled by the faculty concerned).
- Coordinating annual student registration for all batches of students in all Faculties.
- Coordinating all matters with regard to the issuing of Identity Cards to students.
- Maintenance of the student database for all undergraduate students.

- Convening meetings of the Student Admission Committee of the University and follow-up work.

2.7.3 Student Counsellor

Student counsellors are appointed from the permanent academic staff members of the faculty. They are for the development and welfare of the student community and to maintain students' discipline in the faculty. Students in the faculty are entitled to guidance and counselling services to improve academic achievement during their undergraduate period. Such guidance, advising, coordinating and counselling itself can play a role in improving the academic achievement of the students in the faculty. Also, student counsellors address the personal and social needs of the students to become a molded intellectuals. Further, student counsellors advise students to follow the proper communication channel to contact with University Authorities and assist the Administration in inquiring about any disciplinary misconduct of the students.

2.7.4 Academic Mentors

Each permanent academic staff member of the faculty is appointed as an Academic Mentor. A number of students are assigned to each mentor. Mentoring is a relationship between a mentor (a lecturer) and a mentee (a student). The goal of the mentorship program is to accelerate the personal and professional development of mentees. This is achieved by providing mentees with guidance, advice and feedback from mentors. Mentoring encourages individuals to develop to their fullest potential and helps an individual to develop his or her own vision for the future. A key benefit of mentoring relationships includes building students' sense of belonging within the faculty community. The mentoring relationship of a student with his or her mentor may continue even after the student's graduation.

3.0 Description of Degree Programmes

3.1 Introduction

The academic programme leading to the degree of Bachelor of Science Honours in Agriculture is offered for a four-year duration and conducted under a semester-based credit unit system. Considering the importance of English in higher learning and job opportunities, English is the medium of instruction throughout the degree programme.

The curriculum of the Bachelor of Science Honours in Agriculture degree programme is revised periodically to suit the changing needs of the Agricultural sector and the technological transformation taking place in the global academic scenario. The latest revision of the curriculum for the Bachelor of Science Honours in Agriculture offered by the faculty took place in 2021/2022. In revising the curriculum, the faculty not only was summative to the needs of the stakeholders, but also was innovative to adopt novelties to the curriculum, considering the changes taking place in the global higher education arena.

3.1.1 Semester System

The four-year degree programme comprises eight semesters. One semester consists of 15 weeks of academic sessions and an examination period. Each course is taught and assessed within the same semester, and end semester examinations, which will be conducted at the end of each semester.

3.2 Programme Outcomes Aligned to Graduate Profile

3.2.1 Bachelor of Science Honours in Agriculture

3.2.1.1 Objectives of the Degree Programme

The objectives of the Bachelor of Science Honours in Agriculture degree are to:

- Produce graduates with discerning knowledge in professional fields in Agriculture.
- Develop the graduates with integrative practical skills in multidisciplinary areas of Agriculture to apply them accurately in the field.
- Communicate the ideas, field-related issues, and solutions efficiently and effectively with relevant people to get maximum benefit from agriculture.
- Produce good team players with outstanding leadership and critical thinking in taking up the challenges in solving field-related problems.
- Guide the graduates to find the appropriate way for entrepreneurship through competent managerial skills.

- Develop the graduates with in-depth knowledge in information usage and facilitate the graduates in making social networks to get maximum involvement against emerging threats in the field.
- Enhance attitudes to work with a clear vision, update the knowledge and adapt to the emerging changes in technology, economics, and societal influences that dramatically impact the agricultural industry.

3.2.1.2 Graduate Profile

Graduate Attributes

1. A graduate of Bachelor of Science Honours in Agriculture degree shall bloom with sound knowledge and practice in agriculture.
2. The graduate shall have the ability to analyze problems critically to give innovative solutions.
3. The graduates shall be effective leaders with skilled communication and collaboration.
4. The graduates are also expected to be critical thinkers, successful entrepreneurs, team players, lifelong learners, efficient problem solvers, responsible decision-makers and competent innovators and creators.
5. The graduates are expected to be able to manage cross-cultural situations by having features like social and environmental responsibility, balanced work-life, and honesty and fairness.

3.3 Credit Value

One credit unit is equivalent to either 15 hours of lectures or 30 hours of practical classes or tutorials or assignments or fieldwork, *etc.,* approved by the Faculty Board. One credit unit has been assigned to a maximum student work of 50 hours, including Lectures, Practical and 'Independent Learning' (IL) approaches. To promote independent learning skills, appropriate learning activities and time requirements were incorporated into the curriculum. Since the new curriculum was developed using the student-oriented approach based on the desired learning outcomes, the credit unit was restated based on the student workload. Credit notation was made more descriptive, including the number of independent learning hours pertaining to each course in addition to the number of lecture hours and practical hours. The numbers following a course title indicate the number of credit units, the number of lecture hours, practical hours and independent learning hours, respectively, that are assessed during the course.

Eg:

- A 2-credit course of 15 hours of theory, 30 hours of practical, and 55 hours of independent learning will be indicated as (2:15/30/55).
- A 2-credit course of 30 hours of theory and 70 hours of independent learning will be indicated as (2:30/00/70).

- A 2-credit course of 60 hours of practical and 40 hours of independent learning will be indicated as (2:00/60/40).

3.3.1 Structure of the Degree Programme

The eight-semester degree programme includes five semesters of the core programme and three semesters of the advanced programme. The core programme will be conducted from the first semester to the fifth semester and comprises 105 compulsory credits, inclusive of 11 non-gradial Credits (NGC).

In the sixth and seventh semesters, a student should select 20 credits offered by the department in which the student is going to specialize and 05 common courses, inclusive of four non-gradial equivalent to 9 credits and one audited course of 2 credits. In the eighth semester, under the supervision of senior lecturer/s, the student should carry out a research project equivalent to 6 credits relevant to the department in which the student is specializing.

A student should complete a minimum of 142 credits, inclusive of non-gradial courses equivalent to 20 credits and an audit course for 2 credits during the four academic years of the degree programme. The faculty offers advanced programmes in the 6th and 7th semesters to provide in-depth knowledge and skills in the particular discipline.

3.4 Introduction to Course Units

3.4.1 Course Code

The course code includes a two-letter abbreviation that indicates the name of the Department responsible for offering the course, followed by a four-digit number that denotes the year of study, semester and the serial number of the course, respectively.

Eg: **AB 1201** Introductory Microbiology denotes the first course offered by the Department of Agricultural Biology in the Second Semester of the First Year study programme.

AB	1	2	01
↓	↓	↓	↓
Department	Year	Semester	Course number

3.4.2 Abbreviations used in the Departments of Study

Name of the Department	Abbreviation
Agricultural Biology	AB
Agricultural Chemistry	AC
Agricultural Economics	EC
Agricultural Engineering	AE
Animal Science	AS
Crop Science	CS

3.4.3 Credited Common Courses

The courses, Introduction to Computing I & II and Visual Application Development, are incorporated as credited courses to develop the graduates with in-depth knowledge in information usage.

3.4.4 Non-Gradial Courses

To assist students in acquiring satisfactory knowledge, credited, non-gradial and audited courses are included in the core and advanced programme. Applied Mathematics for Agricultural Science, Applied Mechanics, English (Level I & II), English for Specific Purposes, Introduction to Social Harmony, Career Development (Module I, II & III), Basic Sinhala/Basic Tamil, Industrial Training and Scientific Writing are included as non-gradial courses. It is compulsory for every student to pass the non-gradial courses at a satisfactory level during the degree programme to be eligible for the award of degree.

3.4.5 Audit Courses

To enhance the career opportunities of the students, certain courses have been included in the curriculum as audit courses. The student should satisfy a minimum of 80% attendance for such courses to be eligible for the award of a degree.

The course ‘Application of Statistical Software in Data Analysis’ is one of the audit courses included in the curriculum to improve the interpreting ability of students.

In addition, the students specializing in the Department of Animal Science should follow an English course included in the seventh semester as an audit. The students should satisfy the rules of audit courses to be eligible for the award of the degree.

Apart from this, the student shall follow any course irrespective of his/her specialization in audit with the consent of the Head of the Department of the specialization or supervisor of the research project, without interrupting the

academic timetable to enrich his/her career. To incorporate such courses in an academic transcript, satisfying the rules of audit courses is essential.

3.4.6 Hands-on Experience

A farm practice course was designed to be conducted at the University farm. Primarily, the practical, field visits, and discussions are included in the farm practice course to provide hands-on experience on the realities of farming. Further to strengthen students' professional skills and job opportunities, the courses have been formulated with in-built learning activities such as teamwork, communication, presentation, and practical skills.

3.4.7 Industrial Training

The Industrial Training is included in the 7th semester as a non-gradial common course; equivalent to 6 credits, which should be completed by all students. To familiarize students with professional Agricultural practices prior to graduation, Industrial Training is compulsory. It provides exposure to agricultural practices to develop professional skills and also assists students in future employment opportunities. All students must complete 3 months (600 notional hours) of industrial training to be eligible for the award of the degree. The training should cover a range of activities, like laboratory study and fieldwork.

During the past three decades of active contribution in higher education in Agriculture, the Faculty designed advanced courses, course unit-based curriculum, outcome-based curriculum and introduced teacher-course evaluation, peer review, lesson planning and curriculum monitoring to improve the quality of the Agriculture degree programme in the University system of Sri Lanka. All these achievements were made due to the leadership and commitment of the devoted members of the faculty from its inception.

3.5 Principle Subject Area

3.5.1 Bachelor of Science Honours in Agriculture Degree

3.5.1.1 Principle Subject Areas Offered During Core Programme

Semester	Course Notation	Courses	Credit Units
1100	AB 1101	Agricultural Botany	(2:15/30/55)
	AB 1102	Cell Biology	(1:15/00/35)
	AC 1101	Introduction to Soil Science	(2:15/30/55)
	AE 1101	Engineering Hydrology and Meteorology	(2:15/30/55)
	AE 1102	Applied Mathematics for Agricultural Science*	(1:15/00/35)
	AS 1101	Livestock Production and Agrostology	(2:15/30/55)

	CS 1101	Principles of Crop Production	(2:15/30/55)
	CS 1102	Seed Science and Technology	(1:10/10/30)
	EC 1101	Principles of Agricultural Economics	(2:30/00/70)
Sub Total			**14+01 NGC**

1200	AB 1201	Introductory Microbiology	(2:15/30/55)
	AB 1202	Entomology	(2:15/30/55)
	AC 1201	Nutritional Biochemistry	(2:15/30/55)
	AE 1201	Farm Mechanization	(2:15/30/55)
	AE 1202	Applied Mechanics*	(1:15/00/35)
	AS 1201	Anatomy and Physiology of Farm and Aquatic Animals	(2:15/30/55)
	CS 1201	Principles of Horticulture	(2:15/30/55)
	CS 1202	Plantation Crop Production	(1:15/00/35)
	CS 1203	Agroforestry	(1:15/00/35)
	EC 1201	Agricultural Extension and Rural Development	(2:30/00/70)
Sub Total			**16+01 NGC**

2100	AB 2101	Plant Physiology	(1:10/10/30)
	AB 2102	Principles of Genetics	(1:15/00/35)
	AC 2101	Soil Properties	(2:15/30/55)
	AC 2102	Basics in Soil Fertility and Plant Nutrition	(1:15/00/35)
	AE 2101	GIS & Remote Sensing	(2:15/30/55)
	AS 2101	Applied Animal Nutrition	(2:15/30/55)
	AS 2102	Management of Monogastric Animals	(2:15/30/55)
	CS 2101	Floriculture and Landscape	(2:15/30/55)
	CS 2102	Introductory Statistics	(2:30/00/70)
	EC 2101	Agribusiness Management	(2:30/00/70)
Sub Total			**17**

2200	AB 2201	Principles of Crop Improvement Technology	(2:15/30/55)
	AB 2202	Crop Diseases	(2:15/30/55)
	AC 2201	Food Science and Technology	(2:20/20/60)
	AC 2202	Food and Nutrition	(2:15/30/55)
	AE 2201	Irrigation and Water Management	(2:15/30/55)
	AE 2202	Environmental Engineering	(2:15/30/55)
	AS 2201	Management of Ruminants	(2:15/30/55)
	AS 2202	Fisheries and Aquaculture	(2:15/30/55)
	CS 2201	Agronomy of Field Crops	(2:30/00/70)
	CS 2202	Fruit and Vegetable Production	(1:15/00/35)
	EC 2201	Agricultural Entrepreneurship	(2:30/00/70)
Sub Total			**21**

3100	AB 3101	Tropical Field Entomology	(3:15/60/75)
	AC 3101	Soil Quality Maintenance	(1:00/30/20)
	AC 3102	Value Addition Techniques in Food	(2:00/60/40)
	AE 3101	Fundamentals of Electronics and Instrumentation	(2:15/30/55)
	AE 3102	Engineering Technologies for Agriculture	(1:00/30/20)
	AS 3101	Practices in Farm Animal Production	(2:00/60/40)
	CS 3101	Crop Production Technology	(3:00/90/60)
	CS 3102	Design and Analysis of Experiments	(2:30/00/70)
	EC 3101	Organizations in Agricultural Development	(2:00/60/40)
	EC 3102	Rural Farm Survey	(2:00/60/40)
Sub Total			**20**
Total Credits of Core Programme			**88+02 NGC**

* Non-Gradial Credit (NGC) course

3.5.1.2 Principle Subject Areas in the Advanced Programme

Semester	Course Notation	Courses	Credit Units
3200	AB/AC/AE/ AS/CS/EC	Departmental Compulsory Courses	12
4100	AB/AC/AE/ AS/CS/EC	Departmental Compulsory Courses	8
4200	AB/AC/AE/ AS/CS/EC 4201	Research Project	6
Total Credits of the Advanced Programme			**26**
Total Credits of Principle Subject Areas in the Bachelor of Science Honours in Agriculture degree programme			**114+02 NGC**

3.6 Other Courses

3.6.1 Core Programme

The enhancement and auxiliary courses offered during Core Programmes are compulsory for all students to be eligible for the awarding of the degree.

3.6.1.1 Enhancement Courses

Semester	Course Notation	Courses	Credit Units
1100	CC 1101	Introduction to Computing I	(2:15/30/55)
	CC 1102	English (Level I)*	(1:15/00/35)
1200	CC 1201	Introduction to Computing II	(2:15/30/55)
	CC 1202	English (Level II)*	(1:15/00/35)

	CC 1203	Career Development - Module I*	(1:00/30/20)
2100	CC 2101	Visual Application Development	(2:15/30/55)
	CC 2102	Career Development (Module II)*	(1:00/30/20)
Total Credits of Enhancement Courses in the Core Programme			**06+04 NGC**

* Non-Gradial Credit (NGC) course

3.6.1.2 Auxiliary Courses

Semester	Course Notation	Courses	Credit Units
1100	CC 1103	Introduction to Social Harmony*	(1:15/00/35)
1200	CC 1204/ CC 1205	Basic Sinhala*/Basic Tamil*	(1:15/00/35)
Total Credits of Compulsory Auxiliary Courses in the Core Programme			**02 NGC**

* Non-Gradial Credit (NGC) course

3.6.2 Advanced Programme

The enhancement and auxiliary courses offered during Advanced Programmes are compulsory for all students to be eligible for the award.

3.6.2.1 Enhancement Courses

Semester	Course Notation	Courses	Credit Units
3200	CC 3201	Career Development Module III*	(1:00/30/20)
	CC 3203 CC 3204 CC 3205 CC 3206	**English for Specific Purpose*** English for Agriculture or English for Agribusiness or Management English for Business Writing or English for Meetings and Presentation	(1:15/00/35)
	AS 3213	English for Animal Science - Level I***	(1:00/30/20)
4100	CS 4101	Application of Statistical Software in Data Analysis**	(2:00/60/40)
	CC 4101	Industrial Training*	6
	AS 4111	English for Animal Science - Level II***	(1:00/30/20)
Total Credits of Enhancement Courses in the Advanced Programme			**08 (NGC)+ 02 Audit**

* Non-Gradial Credit (NGC) Course
** Audit Course
*** Audit Courses, offered to students specializing in the Department of Animal Science

3.6.2.2 Auxiliary Courses

Semester	Course Notation	Courses	Credit Units
3200	CC 3202	Scientific Writing*	(1:15/00/35)
Total Credits of Auxiliary Courses in the Advanced Programme			**01 NGC**
Total Credits of the Bachelor of Science Honours in Agriculture degree programme			**120+17 NGC +02 Audit**

* Non-Gradial Credit (NGC) Course

3.7 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 1101	Agricultural Botany	✓				
AB 1102	Cell Biology	✓				
AC 1101	Introduction to Soil Science	✓				
AE 1101	Engineering Hydrology and Meteorology	✓				
AE 1102	Applied Mathematics for Agricultural Science*	✓	✓			
AS 1101	Livestock Production and Agrostology	✓				
CS 1101	Principles of Crop Production	✓				
CS 1102	Seed Science and Technology	✓				
EC 1101	Principles of Agricultural Economics	✓	✓			
CC 1101	Introduction to Computing I	✓		✓		

CC 1102	English (Level I) *			✓		
CC 1103	Introduction to Social Harmony*					✓
AB 1201	Introductory Microbiology	✓				
AB 1202	Entomology	✓				
AC 1201	Nutritional Biochemistry	✓				
AE 1201	Farm Mechanization	✓				
AE 1202	Applied Mechanics*	✓				
AS 1201	Anatomy and Physiology of Farm and Aquatic Animals	✓				
CS 1201	Principles of Horticulture	✓				
CS 1202	Plantation Crop Production	✓				
CS 1203	Agroforestry	✓				
EC 1201	Agricultural Extension and Rural Development	✓				
CC 1201	Introduction to Computing II	✓		✓		
CC 1202	English (Level II) *			✓		
CC 1203	Career Development - Module I*				✓	✓
CC 1204/ CC 1205	Basic Sinhala*/Basic Tamil*			✓		✓
AB 2101	Plant Physiology	✓				
AB 2102	Principles of Genetics	✓				

AC 2101	Soil Properties	✓				
AC 2102	Basics in Soil Fertility and Plant Nutrition	✓				
AE 2101	GIS & Remote Sensing	✓				
AS 2101	Applied Animal Nutrition	✓				
AS 2102	Management of Monogastric Animals	✓				
CS 2101	Floriculture and Landscape	✓				
CS 2102	Introductory Statistics	✓	✓			
EC 2101	Agribusiness Management	✓	✓			
CC 2101	Visual Application Development	✓		✓		
CC 2102	Career Development - Module II*				✓	✓
AB 2201	Principles of Crop Improvement Technology	✓				
AB 2202	Crop Diseases	✓				
AC 2201	Food Science and Technology	✓				
AC 2202	Food and Nutrition	✓				
AE 2201	Irrigation and Water Management	✓				
AE 2202	Environmental Engineering	✓				

AS 2201	Management of Ruminants	✓				
AS 2202	Fisheries and Aquaculture	✓				
CS 2201	Agronomy of Field Crops	✓				
CS 2202	Fruit and Vegetable Production	✓				
EC 2201	Agricultural Entrepreneurship	✓				
AB 3101	Tropical Field Entomology	✓	✓	✓	✓	✓
AC 3101	Soil Quality Maintenance	✓	✓			
AC 3102	Value Addition Techniques in Food	✓	✓			
AE 3101	Fundamentals of Electronics and Instrumentation	✓	✓			
AE 3102	Engineering Technologies for Agriculture	✓	✓			
AS 3101	Practices in Farm Animal Production	✓	✓			
CS 3101	Crop Production Technology	✓	✓			
CS 3102	Design and Analysis of Experiments	✓	✓			

EC 3101	Organizations in Agricultural Development	✓	✓			
EC 3102	Rural Farm Survey	✓	✓			✓
CC 3201	Career Development Module III*				✓	✓
CC 3202	Scientific Writing*				✓	✓
CC 3203	English for Agriculture			✓	✓	
CC 3204	English for Agribusiness Management			✓	✓	
CC 3205	English for Business Writing			✓	✓	
CC 3206	English for Meetings and Presentation			✓	✓	
AB 3201	Plant Resistance to Pest	✓	✓	✓		
AB 3202	Plant Molecular Biology	✓		✓		
AB 3203	Breeding Strategies of Economically Important Crops	✓		✓		
AB 3204	Water Relations of Plants	✓		✓		
AB 3205	Plant Pathology	✓		✓		
AB 3206	Recombinant DNA Technology	✓		✓		
AB 3207	Productive Entomology	✓		✓		
AB 3208	Applied Microbiology	✓		✓		

AB 3209	Introductory Nematology	✓		✓		
AB 3210	Insect Morphology	✓	✓	✓	✓	✓
AB 3211	Plant Disease Diagnosis	✓	✓	✓		
AC 3201	Natural Resources and Soil Fertility	✓				
AC 3202	Advanced Soil Science	✓				
AC 3203	Applied Soil-Plant Microbe Interaction	✓				
AC 3204	Introduction to Soil Biochemistry	✓				
AC 3205	Principles of Instrument Analysis and Techniques in Soil Research	✓				
AC 3206	Soil Fertility Evaluation and Fertilizers	✓				
AC 3207	Food Chemistry	✓				
AC 3208	Food Microbiology	✓				
AC 3209	Food Analysis	✓				
AC 3210	Postharvest Technology of Agricultural Commodities	✓				
AC 3211	Processing Technology of Crop Commodities	✓				

AC 3212	Dietetics	✓				
EC 3201	Agricultural Finance	✓	✓			
EC 3202	Agricultural Price Analysis	✓				
EC 3203	Environmental Economics	✓	✓			
EC 3204	Gender and Development	✓				
EC 3205	Land Economics	✓				
EC 3206	Development Economics	✓				
EC 3207	Production Economics	✓	✓			
EC 3208	Natural Resource Economics	✓	✓			
AE 3201	Climate Change and Water Resource Management	✓				
AE 3202	Soil and Water Conservation Engineering	✓				
AE 3203	Environmental Pollution and Control	✓				
AE 3204	Green Technology for Agriculture	✓				
AE 3205	Postharvest Engineering	✓				
AE 3206	Testing and Evaluation of Farm Machinery	✓				

AE 3207	Integrated River Basin Management	✓				
AE 3208	Engineering Hydraulics	✓				
AE 3209	Image processing & Spatial analysis	✓				
AE 3210	Fundamentals of Surveying	✓				
AE 3211	Structural Design of Farm Structures	✓				
AE 3212	Automation and Process Control Systems for Agriculture	✓				
AE 3213	Disaster Management & Mapping	✓				
AE 3214	Agricultural Food Processing					
AE 3215	Internet of Things (IoT) in Agriculture					
AS 3201	Grassland Science	✓				
AS 3202	Animal Biotechnology	✓				
AS 3203	Fish Biology	✓				
AS 3204	Animal Waste Handling	✓				
AS 3205	Animal Genetics and Breeding	✓				
AS 3206	Climatology and Animal Production	✓				

AS 3207	Animal Disease, Hygiene and Public Health	✓				
AS 3208	Aquaculture Nutrition	✓				
AS 3209	Micro Livestock Production	✓				
AS 3210	Animal Behavior and Welfare	✓				
AS 3211	Integrated Livestock Farming Systems	✓				
AS 3212	Animal Biodiversity and Conservation	✓				
AS 3213	English for Animal Science - Level I**	✓				
CS 3201	Crop Physiology	✓				
CS 3202	Plant Biotechnology	✓				
CS 3203	Sustainable Agriculture	✓				
CS 3204	Weed Management	✓				
CS 3205	Cropping Systems	✓				
CS 3206	Protected Agriculture	✓				
CS 3207	Orchard Management	✓				
CS 3208	Rice Agronomy	✓				
CS 3209	Climate Change and Crop Production	✓				
CS 3210	Nanotechnology for Crop Production	✓				
CS 3211	Drone for Crop Management	✓				

CS 4101	Application of Statistical Software in Data Analysis**	✓	✓	✓		
CC 4101	Industrial Training*	✓	✓		✓	
AB 4101	Advanced Plant Physiology	✓		✓		
AB 4102	Clinical Plant Pathology	✓		✓		
AB 4103	Advanced Plant Pathology	✓		✓		
AB 4104	Insecticide Toxicology	✓		✓		
AB 4105	Biological Control of Insect Pests	✓		✓		
AB 4106	Plant Genetic Resources and Conservation	✓		✓		
AB 4107	Quantitative Plant Breeding	✓		✓		
AB 4108	Plant-Microbe Interactions	✓		✓		
AB 4109	Microbial Biotechnology	✓		✓		
AB 4110	Plant Virology	✓		✓		
AB 4111	Production of Genetically Modified Organisms and its Biosafety	✓		✓		
AB 4112	Molecular Plant Breeding	✓		✓		
AB 4113	Stress Physiology	✓		✓		

AC 4101	Soil Conservation and Environmental Quality	✓				
AC 4102	Land Evaluation and Land Use Planning	✓				
AC 4103	Biology of Soil Eco-System	✓				
AC 4104	Problematic Soil Management	✓				
AC 4105	Soil and Nutrient Management for Sustainability in Agro Ecosystems	✓				
AC 4106	Soil Pollution and Control Strategies	✓				
AC 4107	Soil Quality and Health	✓				
AC 4108	Food Safety and Quality Control	✓				
AC 4109	Food processing engineering	✓				
AC 4110	Bio Processing Technology	✓				
AC 4111	Processing Technology of Animal Commodities	✓				
AC 4112	Community Nutrition	✓				
AC 4113	Applied Human Nutrition	✓				
EC 4101	Social Research Methodology	✓				

EC 4102	Agricultural Marketing	✓	✓			
EC 4103	Basic Econometrics	✓	✓			
EC 4104	Environmental Valuation	✓	✓			
EC 4105	Information Systems for Agricultural Development	✓				
EC 4106	International Trade	✓				
EC 4107	Project Planning and Investment Analysis	✓				
EC 4108	International Economics	✓				
AE 4101	Advanced Watershed Management	✓				
AE 4102	Pressurized Irrigation System	✓				
AE 4103	Water Quality for Agriculture	✓				
AE 4104	Environmental Impact Assessment	✓				
AE 4105	Waste Management	✓				
AE 4106	Advanced Farm Mechanization	✓				
AE 4107	Postharvest and Process Engineering	✓				
AE 4108	Advanced Hydrology and Climatology	✓				
AE 4109	Hydrogeology	✓				
AE 4110	Drone Technology & Mapping	✓				

AE 4111	Geospatial Technologies for Agriculture	✓				
AE 4112	Sensor Technology for Precision Agriculture	✓				
AS 4101	Ruminant Nutrition	✓				
AS 4102	Monogastric Nutrition	✓				
AS 4103	Physiology of Cattle Reproduction and Lactation and Endocrinology	✓				
AS 4104	Advanced Livestock Breeding	✓				
AS 4105	Culture of Ornamental Fish and Aquatic Plants	✓	✓		✓	
AS 4106	Meat and Dairy Technology	✓				
AS 4107	Mineral Nutrition in Ruminants	✓				
AS 4108	Shrimp Production Technology	✓				
AS 4109	Egg and Fish Processing Technology	✓				
AS 4110	Chicken Embryology and Hatchery Technology	✓				
AS 4111	English for Animal Science - Level II**	✓				

AS 4112	Aquafeed Technology	✓				
CS 4101	Application of Statistical software in data analysis	✓				
CS 4102	Organic Farming	✓				
CS 4103	Climate Smart Agriculture	✓				
CS 4104	Plant Tissue Culture Technology	✓				
CS 4105	Commercial Seed Production	✓				
CS 4106	Commercial Nursery Management	✓				
CS 4107	Commercial Floriculture	✓				
CS 4108	Crop Modeling	✓				
CS 4109	Dry Farming	✓				
CS 4110	Urban Horticulture	✓				
AB/AC/AE/EC/AS/CS 4201	Research Project	✓	✓	✓	✓	✓

3.8 Curriculum Matrix

Degree and Year	Level of Offered Courses	Number of Credits in Principal Subjects						Auxiliary Courses	Enhancement (EN) Courses and Credits		Total Credits for the Award
		AB	AC	AE	AS	CS	EC		Courses	Credit	
CORE PROGRAMME											
Bachelor of Science Honours in Agriculture 2023/2024	First Semester	3	2	2 + 1*	2	3	2	1*	Introduction to Computing I	2	16+3 (NGC)
									English (Level I)*	1*	
	Second Semester	4	2	2 + 1*	2	4	2	1*	Introduction to Computing II	2	18+4 (NGC)
									English (Level II)*	1*	
									Career Development - Module I*	1*	
	Third Semester	2	3	2	4	4	2	-	Visual Application Development	2	19+1 (NGC)
									Career Development - Module II*	1*	
	Fourth Semester	4	4	4	4	3	2	-	-	-	21
	Fifth Semester	3	3	3	2	5	4	-	-	-	20
	Total Credits of Core Programme										**94+8 (NGC)**

Degree and Year	Level of Offered Courses	Number of Credits in Principal Subjects						Auxiliary Courses	Enhancement (EN) Courses and Credits		Total Credits for the Award
		AB	AC	AE	AS	CS	EC		Courses	Credit	
ADVANCED PROGRAMME											
Bachelor of Science Honours in Agriculture 2023/2024	Sixth Semester	12	12	12	12	12	12	1*	**English for Specific Purpose*** English for Agriculture or English for Agribusiness Management or English for Business Writing or English for Meetings and Presentation	1*	12+3 (NGC)
									Career Development - Module III*	1*	
	Seventh Semester	8	8	8	8	8	8	-	Industrial Training	6*	8+6 (NGC)+2 (Audit)
									Application of Statistical Software in Data Analysis**	2**	
	Eighth Semester	6	6	6	6	6	6	-	-	-	6
	Total Credits of the Advanced Programme										**26+9 (NGC)+2 (Audit)**
	Total Credits of Bachelor of Science Honours in Agriculture Degree Programme										**120+17 (NGC)+2 (Audit)**

*Non-Gradial Credits; ** Audited Credits

4.0 Examinations and Evaluation

4.1 Examinations

Each course will be assessed on a continuous basis within the semester. Every course will have more than one assessment conducted at critical stages of learning of the course. Each academic year consists of two semesters, and each semester comprises 15 weeks, specifically with 75 working days. There will be eight end semester examinations during the four academic years for the Bachelor of Science Honours in Agriculture degree programme.

4.1.1 Types of Examination

4.1.1.1 Theory Component of the Credited Course

Course evaluation would include of continuous assessment during the academic semester and end semester examinations.

4.1.1.1.1 Continuous Assessment

The Quiz shall be conducted at the fifth week of each academic semester. **The Quiz will not be repeated,** and the student will be given zero marks, if absent on the scheduled date of examination. The marks obtained by a student for a course will be considered while evaluating the particular course at his / her repeat attempts.

Mid Semester Assessment shall be conducted at the tenth week of each academic semester. It is compulsory for the students to sit the mid semester examination for all the courses. The student who is absent to the mid semester examination should sit the examination when it is held next by submitting the Medical Certificate to the respective department within two weeks from the examination date. The student who fails a course/subject at the end semester examination along with below 50% of marks in the mid semester examination shall repeat the mid semester examination in consecutive attempts, if he /she wishes, with the consent of the course teacher. Among the obtained marks whichever is the highest will be considered for the final evaluation of the course.

4.1.1.1.2 End Semester Assessment

The end semester examination will be conducted at the closure of each academic semester. The examination will be conducted as per the manual of procedure for the conduct of examination of Eastern University, Sri Lanka.

4.1.1.2 Practical Component of the Credited Course

The practical component of the course will be assessed continuously and by the end semester practical examination. The marks for practicals will be based on the Credit Unit allocated for the respective practical. Practical Recording will be

considered for the final assessment of the Practical component of the course. The maximum marks of 10% of the final assessment of the Practical component shall be given to Practical Recording with the consent of the course teacher. Oral examinations shall be a component of the practical assessment for certain courses. Appropriate assessment procedure/s, the percentage contribution of each assessment, including independent learning, will be determined by the Head of the Department in consultation with the course teacher in agreement with the assessment of Independent Learning. **The student should attend the examinations of the theory and practical components of a course in the same sitting in order to pass the course.**

4.1.1.3 Duration and allocated marks of the Examination

The **minimum total duration** and **percent marks** of the examinations will vary according to the number of credit units covered in the course, as follows;

Components of the Course	Examination	Duration (hr)			Marks (%)
		1 Credit	2 Credits	3 Credits	
Theory	Quiz	½	½	½	10
	Mid Semester	1	1	1	25
	End Semester	1	2	3	65
Practical	Final Assessment	2	3	3	90
	Continuous Assessment (Practical Records)	-	-	-	10

4.1.1.4 Independent Learning (IL)

The evaluation method of Independent Learning of each course would be decided by the course teacher and evaluated at the proper time. However, the allotted marks should not exceed 20% and 40% of the end semester examination of both theory and practical components of each course, respectively. The assessment of Independent Learning should be informed to the students at the beginning of the semester.

4.1.1.5 Non-Gradial Courses (NGC)

The non-gradial courses will be assessed on a satisfactory/ unsatisfactory basis and will not contribute to the Final Grade Point Average (FGPA). However, obtaining a ‘Satisfactory’ level (C grade) for a non-graded course is mandatory to be eligible for the award of degree.

4.1.1.6 Career Development Modules

The career development modules are the non-gradial courses, which will be assessed as discussed below:

	Evaluation method	Marks (%)
1	In-course assessments (assessed by the individual resource person (minimum 05), and all marks will be compiled)	50
2	Oral examination – At the end of the semester	50

4.1.1.7 Industrial Training

Industrial training, the non-gradial course, will be assessed through students' reports and logbooks. The marks will be allocated as follows:

- Training Supervisor's Report (20%)
- Training Advisor reports through visit or survey (10%)
- Industrial Training Report (70%)

4.1.1.8 Audit Course

The audit courses will be assessed based on the student's attendance in the course. The student should satisfy a minimum of 80% attendance for such courses to be eligible for the award of a degree.

4.1.1.9 Research Project

The project work during the 8th Semester (Final Year) will be assessed continuously, and the marks will be allocated as follows:

- Proposal Presentation - 10%
- Student Progression - 40%
- Project report - 30%
- Project Presentation - 20%

The project presentation and the report of the Research Project will be assessed by a panel of examiners appointed by the Faculty Board.

Five copies of the final hardbound reports certified by the supervisors should be **submitted to the Head of the Department within one month from the date of presentation** for the release of results.

4.1.2 Eligibility for Examination

Course Attendance (Credited, Non-Gradial and Audit Courses)

A student who does not have a minimum of 80% attendance for both theory and practical classes will not be eligible to sit the end semester examination and shall be given "Not Allowed" (NA). The student will be considered as a repeat candidate when the examination is held next. **The highest grade given for such an attempt will be a grade of "C".**

Students should support the absence from coursework due to illness with a valid medical certificate issued by the government hospitals or the University Medical Officer (UMO). Under exceptional circumstances only, medical certificates issued by other medical practitioners could be validated by the University Medical Officer. A valid medical certificate means a medical certificate issued by the following persons:

- University Medical Officer
- District Medical Officer
- Consultant specialist in the relevant field
- Head of a Government Base Hospital
- Medical Superintendent of an Ayurvedic/Government Hospital
- Ayurvedic Physician registered in the Ayurvedic Medical Council

Students should obtain prior permission by submitting a letter issued by the Director/Physical Education to the Dean of the Faculty to support the absence from coursework due to inter-university or international sports activities. Representatives of the student union should submit an official document to the Dean of the Faculty to support the absence from coursework due to official Union Meetings.

4.1.3 Application Procedure

The DR/SAR Academic Affairs or AR / Faculty of Agriculture shall call for entry applications for examinations from candidates no later than two weeks prior to the date of closure of the respective semester. Applications shall be made by the candidates on the prescribed Form obtained from the Academic Affairs Department.

4.1.4 Absence from Examinations

Except for any justifiable reasons accepted by the Faculty Board and on Medical grounds supported by a valid medical certificate, if a student is absent from scheduled examinations will be considered as a **REPEAT student** for the next attempt at examination.

Absence from the examination or a part of it (theory or practical) due to illness should be reported to the Dean of the Faculty within 7 days from the date of the

examination. A Medical certificate should be submitted within 14 days to the Dean, Faculty of Agriculture, to consider him/her as the proper candidate for the next attempt at the examination.

If a student is absent from a part of the examination (theory or practical) of a course should sit both examinations in the same sitting to pass the particular course.

The student who is absent from the examinations on medical grounds should complete the examination at the first available opportunity.

4.1.5 Prerequisites to enter the Third Year of the degree programme

A student should pass 50% of the total courses offered as credited courses in each semester of the First and Second years of the academic programmes of the BSc Honours in Agriculture degree programme. If a student fails to pass 50% of the total courses as described above at the end of the second year examination, he/she will not be permitted to proceed to the third year of study until they complete the expected 50% pass level. Such a student will be considered as a batch-missed student and allowed to continue the degree programme with the succeeding batch of students, if he/she fulfil the prerequisites to enter the third year of the degree programme.

4.2 Evaluation

4.2.1 Grade and Grade Points

A 4-point scale will be adopted for grading the performance of students for credited courses. The letter grade shall be awarded for each course. It is the measure of the quality of work done in a course. The grade will be given to the final, rounded mark of each course. The cut-off marks for each grade and the corresponding grade points are given below:

% Marks	Grades	Grade Point
≥ 90	A+	4.0
80-89	A	4.0
75-79	A-	3.7
70-74	B+	3.3
65-69	B	3.0
60-64	B-	2.7
55-59	C+	2.3
50-54	C	2.0
45-49	C-	1.7
40-44	D+	1.3
35-39	D	1.0
< 35	E	0.0

Note: Grade A^+ will be given to those who obtained a distinctly high mark of $\geq$90% and are outliers of the marks distribution.

4.2.2 Grade Point Average (GPA)

Grade point average will be calculated as the weighted average of grade points obtained from grades of different courses and the number of corresponding course Units. This aggregate index shall be called as Grade Point Average (GPA).

$$GPA_1 = \left[\sum (C_{i1}G_{i1}) + \sum (C_{i2}G_{i2})\right] \div \sum (C_{i1}+C_{i2})$$

C_{i1} - Credit of ith course in the first semester
C_{i2} - Credit of ith course in the second semester
G_{i1} - Grade point of the ith course in the first semester
G_{i2} - Grade point of the ith course in the second semester
GPA_1 - Grade Point Average for the first year

The Final Grade Point Average (FGPA) for the degree programme will be calculated at the completion of all requirements for the degree, as follows:

$$FGPA = \sum (A_i P_i)$$

A_i – GPA of ith year (i = 1st, 2nd, 3rd and 4th year of study)
P_i – 20%, 25%, 25%, and 30% of GPA of 1st, 2nd, 3rd and 4th year of Study

The FGPA will be rounded to the second decimal place.

4.2.3 Passing of a Course

A student who obtains any grade less than 'C' has to improve the grade up to a maximum of grade 'C' before completing the degree programme, within EIGHT academic years.

4.2.4 Repetition of a Course Unit

A student who has obtained a grade below 'C' in a particular course must repeat both the **theory and practical examinations** to upgrade the grade to 'C' when it is held next in the faculty**.** The maximum grade for an examination repeated shall be '**C'**.

A student shall be permitted to **repeat the examination only THREE TIMES within EIGHT academic years** from the time of registration. A grace chance may be permitted in addition to the three repeat attempts with the approval of the Faculty Board and Senate **within EIGHT academic years**.

4.3 Award of Degree

To award a degree, a student should achieve a minimum of 'C' grade in all credited courses, a 'Satisfactory' level (C grade) of passing in non-graded courses and a satisfactory level of attendance (80%) in all audit courses offered during the degree programme within a period of 8 consecutive academic years from the date of Registration/ enrolment at the Eastern University. Failing, he/she shall not be awarded a degree.

4.4 Award of Class

Classes will be awarded at the completion of the degree programme. To be eligible for a class, a student should successfully complete the degree programme by fulfilling the requirements of the degree programme within FOUR academic years, except for the situation accepted by the Faculty Board and approved by the University Senate and obtain the required FGPA.

A student who obtains **any grade less than 'C' and improves the grade up to** a **maximum of 'C'** before completing the degree programme **within FOUR academic years** is also eligible to get a Class.

However, a student who is punished for misconduct or offences by the authority of Eastern University, Sri Lanka, will not be eligible to get a class.

Required FGPA for the award of class

Class	Minimum FGPA
First Class	3.70 or above
Second Class (Upper Division)	3.30 – 3.69
Second Class (Lower Division)	3.00 – 3.29
Pass	2.00 – 2.99

4.5 Award of Other Qualifications

4.5.1 Fallback Options

A student who fails in obtaining a minimum of 2.0 FGPA even after attempting all given chances and completing a minimum of 04 academic years is eligible to apply for the following qualifications. However, the student who is expelled from the university on disciplinary grounds is not eligible for fallback options.

The first day of the month after which the Senate of the Eastern University, Sri Lanka has approved the award of the qualification, made on the student's request and on the recommendation of the Faculty Board of Agriculture, will be considered as the effective date of such qualification.

4.5.1.1 Award of Diploma in Agriculture (SLQF Level 3)

A candidate shall be awarded a Diploma in Agriculture if he/she obtained the following within eight academic years:

i. C or better grades (pass) for at least 30 credits among the credited courses of 120 credits offered in eight semesters for Bachelor of Science Honours in Agriculture, of which at least two courses from each department offered as credited courses,

ii. Eligibility to sit the end semester examination for all non-gradial courses offered in eight semesters for the Bachelor of Science Honours in Agriculture.

4.5.1.2 Award of Higher Diploma in Agriculture (SLQF Level 4)

A candidate shall be awarded a Higher Diploma in Agriculture if he/she obtained the following within eight academic years:

i. C or better grades (pass) for at least 60 credits among the credited courses of 120 credits offered in eight semesters for Bachelor of Science Honours in Agriculture, of which at least two courses from each department offered as credited courses, including the Research Project,

ii. Eligibility to sit the end semester examination for all non-gradial courses offered in eight semesters for the Bachelor of Science Honours in Agriculture.

4.6 Effective Date of the Degree

The date of the project presentation or the last date of the semester examination of the particular examination, whichever comes later, as decided by the Faculty Board, will be considered as the EFFECTIVE DATE OF THE DEGREE programme.

5.0 Course Specification

5.1 Bachelor of Science Honours in Agriculture Degree

5.1.1 Principle Subjects of the Core Programme

5.1.1.1 Subjects Offered by the Department of Agricultural Biology

The Department of Agricultural Biology is responsible to enhance and protect ecosystems required for food production and environmental sustainability. In connection with this responsibility, the department offers high quality education to the undergraduate students in advancing biological knowledge through teaching, research and training. The Department is dedicated to cover the wide spectrum of contemporary biological sciences from molecular aspects to field ecology. Subject coverage spans from knowledge on Plant Physiology, Plant Systematics, Plant Breeding, Genetics, Pathology, Microbiology, Entomology, Pest Management and Molecular Biology. The degree programme also provides extensive hands-on training on biology related laboratory and fieldwork.

Serial Number	Course Notation	Courses	Credit Units
1.	AB 1101	Agricultural Botany	(2:15/30/55)
2.	AB 1102	Cell Biology	(1:15/00/35)
3.	AB 1201	Introductory Microbiology	(2:15/30/55)
4.	AB 1202	Entomology	(2:15/30/55)
5.	AB 2101	Plant Physiology	(1:10/10/30)
6.	AB 2102	Principles of Genetics	(1:15/00/35)
7.	AB 2201	Principles of Crop Improvement Technology	(2:15/30/55)
8.	AB 2202	Crop Diseases	(2:15/30/55)
9.	AB 3101	Tropical Field Entomology	(3:15/60/75)

AB 1101: Agricultural Botany (2:15/30/55)

Theory: Morphology and taxonomy of the family Poeceae, vegetative and reproductive structures of cereal crops, sugarcane, rice, maize and sorghum. Salient features of brinjal, tomato and chillies under the family solanaceae. Family Cucurbitaceae- vegetative and floral structures of pumpkin, cucumber and water melon. Family Fabaceae- groundnut, soybean, *Phaseolus* sp., *Vigna* sp., cowpea, green gram and black gram. Plantation crop- tea, Oil crops- coconut and castor, Spice crops- clove, cinnamon, vanilla, ginger, pepper and turmeric. Beverage crops- cocoa and coffee. Fruit crops- Families Rutaceae- *Citrus* sp, Musaceae- banana and Caricaceae- papaya.

Practical: General features of the morphology and taxonomy of family Grammnae, Vegetative and floral morphological features of cereal crops- sugar cane, Vegetative and floral morphological features of paddy, maize and sorghum, Family Solonaceae- Salient features of brinjal, tomato and chillies, Family Cucurbitaceae-

Key to the principally cultivated genera, vegetative and floral morphology of cucurbits, Features of cucumber and watermelon, Family Leguminosae- Key to the sub- families, groundnut, soybean, and Phaseolus sp, Family Leguminosae (cont.) – Vigna sp. Cowpea, green gram and black gram, Tea: Systematics, salient features of tea and coconut, General morphological features of castor, Spice Crops – Uses, Morphological features of clove, vanilla, pepper, cinnamon, ginger and turmeric, Beverage crops-coffee, general features, dimorphic branching habit, Cocoa- important cultivars, branching habit, and general morphological features, Fruit crops: Banana and Citrus: Morphological and floral features. Papaw, characteristics features.

AB 1102: Cell Biology (1:15/00/35)

Structure of prokaryotic and eukaryotic cells; cell organizations and functions; biomembrane structure and function; membrane potential, ionic equilibrium, ionic steady state; transport mechanisms across biomembranes; Introduction and types of transport mechanisms across the cell membranes; Passive and active transport and passive and facilitated diffusion, Active transport mechanisms, Membrane Transport Proteins: Transporters and Channels, protein trafficking; structure and function of cytoskeleton; intracellular messengers, cell signaling & signal transduction and homeostasis; cell cycle, regulation and apoptosis.

AB 1201 Introductory Microbiology (2:15/30/55)

Fundamentals of microbiology; Morphology, cytology, classification and reproduction of microorganisms: Bacteria, Fungi and virus; Microscopy; Bacterial growth; Bacterial genetics; soil microbiology: Microbial groups in soil; Microbial transformations of carbon and nitrogen, Beneficial microorganisms in agriculture.

AB 1202 Entomology (2:15/30/55)

Theory: Introduction to insect taxonomy; significant characters of insect orders; Insect collection and preservation; grouping of insects into orders; scientific nomenclature to insects; external morphology and physiology of a typical insect, metamorphosis and its types; types of immature insects; Introduction to dichotomous key; insect damages and its mouthparts.

Practical: Collecting methods of insects, Grouping of insects into different orders, External morphology of insects – draw the picture, label different structures, Preserving methods of insects, Immature insects, Types of insect antennae, Antennal grooming in insects**,** Types of insect mouthpart – Typical, Haustellate type of mouthparts, Sponging type of mouth parts, Leg modifications, Wing modifications and coupling mechanism, Abdominal structures and its modifications, Damages caused by insects and Preparation of dichotomous key.

AB 2101 Plant Physiology (1:10/10/30)

Osmosis, Free energy and the concept of water potential, Cell water relations, technical terms in plant water status, Absorption of water and root and stem pressures, Guttation, pathway of water through roots, The Ascent of sap, Mechanism of sap rise, Photosynthesis, early photosynthetic research, principles of light absorption by plants, photosystems, photochemical and biochemical reactions- C3, C4 and CAM pathways, Photophosphorylation, Photorespiration, Transport and Partitioning, Phloem loading and unloading, Source- Sink relationship.

AB: 2102 Principles of Genetics (1:15/00/35)

Introduction, Mendelian inheritance, linkage and crossing over, Chromosomal behaviour and variations, Chromosome mapping, Introduction to cytogenetics, Mutation, Sex determination and sex linkage in plants and animals, Concepts of quantitative genetics, Hardy-Weinberg equilibrium and gene frequencies, Polygenic inheritance, Population genetics.

AB 2201 Principles of Crop Improvement Technology (2:15/30/55)

Theory: Introduction, Evolution of crop species, Centres of origin of crop species, Plant genetic resources, Methods of breeding field crops, Techniques in breeding, Selfing and crossing techniques, Screening for tolerance to biotic and abiotic stresses, Cytogenetics and polygenes in plant breeding, Biotechnological breeding, Importance of PGR and biodiversity in genetic improvement of plants.

Practical: Natural vegetative propagation materials, Centres of origin, Kinds of flowers, Floral structure of important agricultural crop, A case study on varieties of different crops in EUSL crop farm and farmer fields in Vantharumoolai and Chenkalady, Tools used in plant breeding, Emasculation techniques, Application of different emasculation techniques in the field, Selfing techniques and crossing techniques in plants.

AB 2202 Crop Diseases (2:15/30/55)

Theory: General approach to plant disease management and control; Symptoms, etiology, disease cycle and management of major diseases of field, horticultural and plantation crops in Sri Lanka.

Practical: Identification and histopathological studies of selected diseases of field, horticultural and plantation crops covered in theory. Field visit for the diagnosis of field problems. Collection and preservation of plant diseased specimens.

AB 3101 Tropical Field Entomology (3:15/60/75)

Theory: Various types of management practices of insect pests.

Practical: Identification of insect and mite pests and diseases of vegetable and fruit crops, rice, coconut and stored products; Their biology and damage; Other important vertebrate and invertebrate pests of crops; Postharvest diseases of crops and management strategies of major pests.

5.1.1.2 Subjects Offered by the Department of Agricultural Chemistry

The Department of Agricultural Chemistry consisting of the two main divisions: Food Science and Soil Science. Considerable attention has been given to Food Science and Technology as a discipline during the past few decades by universities worldwide due to its industrial and contemporary importance. The importance of soil as a natural resource has long been recognized by people and along with water and atmosphere, soil act as the life support system of our planet earth. The scientific study of soil started with the rapid development of agriculture and it is now considered as a subject with applications in agriculture, forestry, engineering and environmental sciences. The Department laboratories are well equipped for teaching, research and other experimental needs of the Department. Research in the Department reflects the wide range of disciplines encompassed by Food Science and Soil Science.

Serial Number	Course Notation	Courses	Credit Units
1.	AC 1101	Introduction to Soil Science	(2:15/30/55)
2.	AC 1201	Nutritional Biochemistry	(2:15/30/55)
3.	AC 2101	Soil Properties	(2:15/30/55)
4.	AC 2102	Basics in Soil Fertility and Plant Nutrition	(1:15/00/35)
5.	AC 2201	Food Science and Technology	(2:20/20/60)
6.	AC 2202	Food and Nutrition	(2:15/30/55)
7.	AC 3101	Soil Quality Maintenance	(1:00/30/20)
8.	AC 3102	Value Addition Techniques in Food	(2:00/60/40)

AC 1101 Introduction to Soil Science (2:15/30/55)

Chemical and mineralogical Composition of the earth crust, weathering process; (Mechanical and chemical weathering), Soil forming factors (Parent material, Climate, Topography or relief, Biotic, Time), Process of soil formation (Additions, losses, translocation and transformation), Importance of soil forming factors, Soil profile, Aerial photography, remote sensing, soil survey.

AC 1201 Nutritional Biochemistry (2:15/30/55)

Classification of Nutrients-Carbohydrates-structures, properties and reactions, Lipids- structures, properties and reactions, Protein- structures, properties and reactions, Nucleoproteins- structures, properties and reactions, Enzymes-properties, classification, activity and inhibition, Vitamins-structure, properties, deficiency symptoms, and Co-enzymes relationships, Minerals, Digestion and Energy relationships, Carbohydrate metabolism, Lipid metabolism, Protein metabolism, Metabolic interrelationship. Methods of instrumentation in Biochemical

Analysis. Qualitative and quantitative Analysis of Carbohydrates, Lipids and Proteins.

AC 2101 Soil Properties (2:15/30/55)

Soil Physical Properties: Soil texture, architecture, soil density, porosity, soil colour, soil water, hydrology, aeration, and temperature, define the characteristics and behavior of soil water. Soil physical problems, management practices to overcome soil physical problems. Soil Chemical Properties: Structure & Function of Clay Minerals, Soil Organic Matter, Cation Exchange Reactions and Base Saturation, Soil Acidity & Buffer Capacity. Soil Biology: Soil Microbial Community, Soil Microbial Community Interactions with Plant Roots.

AC 2102 Basics in Soil Fertility and Plant Nutrition (1:15/00/35)

Introduction to plant growth and nutrients. Essential plant nutrients. Chemistry and availability of major, secondary and selected minor elements in the soil. Nutrient's uptake mechanisms by plants. Functions of plant nutrients, deficiency and toxicity symptoms.

AC 2201 Food Science and Technology (2:20/20/60)

Principles of fresh food storage: Properties of food and processing theory, Raw material preparation, size reduction etc., Processing and preservation by hat: Blanching, pasteurization, sterilization, UHT processing, canning, extrusion cooking, microwave heating, Processing and preservation by low Temperature: refrigeration, freezing, CA and MA. Food irradiation, Processing and preservation by trying; sun drying, spray drying, drum drying, and freeze drying. Ultra filtration and reverse osmosis. Processing and preservation by non-thermal methods: High pressure, pulsed electric field, hurdle technology. Application of microorganisms in food processing and preservation. Diary Technology, Cereal Technology, Good Microbiology, Quality control.

AC 2202 Food and Nutrition (2:15/30/55)

Introduction to Nutrition and related technical terms, food groups and food pyramids. Macro- and micro-nutrients and their functions, Role of dietary fiber in Nutrition. Breast feeding and formula feeding. Nutritional aspects of cereals, tubers, pulses and foods from animals. Beverages, Vegetarianism, Organic foods, Junk foods and Functional foods. Food allergy, food intolerance and toxicants in foods. Assessment of nutritional status in human. Diet and nutrition throughout the life cycle, Nutritional disorders (Nutritional deficiency Diseases and Non communicable diseases). Losses of food and nutrients during processing and cooking.

AC 3101 Soil Quality Maintenance (1:00/30/20)

At the completion of this course students will be able to know about the impact of soil property on nutrients availability and plant growth.

AC 3102 Value Addition Techniques in Food (2:00/60/40)

Overview of value addition, value addition and processing of food, General processing operations, value added food processing, value addition of meat products, value addition of milk and milk products, value addition of sea foods, value addition of Palmyra foods.

5.1.1.3 Subjects Offered by the Department of Agricultural Economics

The Department of Agricultural Economics offers a broad scope of study of issues related to agriculture, food, managerial and resource economics. Though the Department is named as Agricultural Economics, it offers courses in two important disciplines in the field of agriculture, which are Agricultural Economics and Agricultural Extension. The Department programme integrates in the discipline of Economic Development, Natural Resource Economics, Production Economics, Agribusiness Management, Marketing, Environmental Economics, Finance and Policy. The Department responsibilities are divided among teaching, extension and research. Significant emphasis is given to the international dimensions of these programmes.

Serial Number	Course Notation	Courses	Credit Units
1.	EC 1101	Principles of Agricultural Economics	(2:30/00/70)
2.	EC 1201	Agricultural Extension and Rural Development	(2:30/00/70)
3.	EC 2101	Agribusiness Management	(2:30/00/70)
4.	EC 2201	Agricultural Entrepreneurship	(2:30/00/70)
5.	EC 3101	Organizations in Agricultural Development	(2:00/60/40)
6.	EC 3102	Rural Farm Survey	(2:00/60/40)

EC 1101 Principles of Agricultural Economics (2:30/00/70)

Introduction: Microeconomics Vs Macroeconomics, Marginal Analysis. Understanding consumer behaviour, Theory of Consumer Behavior, Consumer Equilibrium and Market Demand, Measurement and Interpretation of Elasticities, Business and market equilibrium: Market Equilibrium and Product Price, Production and Resource use, Costs in Short Run vs Long Run, Important Production relationships, Economics of Input Substitution, Economics of Product Substitution, Imperfect Competition in Selling, Imperfect Competition in Buying, Macroeconomics in Agriculture, Composition and Measurement of Gross Domestic Product, Equilibrium National Income and Output.

EC 1201 Agricultural Extension and Rural Development (2:30/00/70)

Introduction to Agricultural Extension: Extension Philosophy, Objectives of Agricultural Extension, Extension fundamentals, Extension teaching methods,

supporting activities for an extension. Adoption and Diffusion of Extension: Adoption Process, Adopter categories, Diffusion and related factors. Extension Communication: Types of communication, Communication process, Communication models, Effective interpersonal communication, public speaking, problems and effectiveness of communication, Agricultural Extension organizations in Sri Lanka, Rural Development: Basic sociological Terms, Understanding the rural society, rural development and agricultural extension.

EC 2101 Agribusiness Management (2:30/00/70)

The role and organization of Agribusiness: Agribusiness in perspective, managing the agribusiness, the organization of Agribusiness. Agribusiness scope and economic importance: agricultural input sector, marketing farm products. Financial management and control of the agribusiness: economics for managers, tools for controlling agribusiness, tools for management decisions in agribusiness, the selling process. Operating the agribusiness: Production planning in the agribusiness, controlling production process in agribusiness. Human Resource Management: Personnel management, managing human resources in agriculture.

EC 2201 Agricultural Entrepreneurship (2:30/00/70)

This Agricultural Entrepreneurship course will provide the students with foundational skills in agribusiness management and operations as well as the opportunity to explore and develop an entrepreneurial mindset critical to future success. In addition, students also be exposed to concepts of entrepreneurial thought/process, and experiential learning through identifying entrepreneurial problems, finding solutions and making connections beyond the classroom.

EC 3101 Organizations in Agricultural Development (2:00/60/40)

Orientation/familiarizing of the functions of the government, non-government departments and private organizations involved in agricultural development, Preparation of comprehensive reports about the organizational visits, Seminar presentation based on the village visit report.

EC 3102 Rural Farm Survey (2:00/60/40)

It consists of the village study visit, Preparation of comprehensive reports about the village visit, Seminar presentation based on the village visit report.

5.1.1.4 Subjects Offered by the Department of Agricultural Engineering

The Department of Agricultural Engineering handles all technological processes involved in the application of engineering to agriculture, food systems, natural resources, environment and related biological systems. Undergraduate degree programme has special emphasis on environmental protection and the biological interface of plants, animals, water and soils with the design and performance of environments, machines, mechanisms, processes and structures along with

geospatial and precision technologies. The Department has well equipped laboratories including machinery workshop with modern facilities to cater the needs of the undergraduates. Automated weather station, Agro-technology park, Irrigation demonstration unit and Waste treatment plant are also maintained by the Department which are very helpful for the teaching and demonstration purposes.

Serial Number	Course Notation	Courses	Credit Units
1.	AE 1101	Engineering Hydrology and Meteorology	(2:15/30/55)
2.	AE 1102	Applied Mathematics for Agricultural Science*	(1:15/00/35)
3.	AE 1201	Farm Mechanization	(2:15/30/55)
4.	AE 1202	Applied Mechanics*	(1:15/00/35)
5.	AE 2101	GIS & Remote Sensing	(2:15/30/55)
6.	AE 2201	Irrigation and Water Management	(2:15/30/55)
7.	AE 2202	Environmental Engineering	(2:15/30/55)
8.	AE 3101	Fundamentals of Electronics and Instrumentation	(2:15/30/55)
9.	AE 3102	Engineering Technologies for Agriculture	(1:00/30/20)

AE 1101 Engineering Hydrology and Meteorology (2:15/30/55)

Theory: Hydrologic cycle: precipitation, interception, infiltration, runoff, groundwater. Types and properties of aquifers. Hydrograph: components of hydrograph, hydrograph separation, concept of unit hydrograph, its derivation and application, and hydrograph of runoff. Introduction to meteorology, Agro-meteorological field station, rainfall producing mechanisms and rainfall seasons in Sri Lanka, climate and evaluation of agro-climatic zones in Sri Lanka.

Practical: Measurement of precipitation, temperature, relative humidity, wind direction & velocity, sunshine hours & radiation, evaporation, stream flow, infiltration, estimation of missing precipitation data, estimation of runoff, estimation of average precipitation over a catchment, automatic weather station, estimation of effective precipitation, field visit.

AE 1102 Applied Mathematics for Agricultural Science* (1:15/00/35)

Basic terms and calculations of surface area, equations of straight lines and circle, common mathematical series, matrix algebra, limits of functions, differentiation, integration and application of differentiation and integration in agriculture.

AE 1201 Farm Mechanization (2:15/30/55)

Farm power sources and engine components, fundamentals of engine operation engine operation, engine systems, soil tillage implements, plant protection equipment, equipment for irrigation, harvesting and threshing equipment, traction

and traction theory, tractor stability, depreciation and costing of farm machinery, human factors and safety of farm machinery operation.

AE 1202 Applied Mechanics* (1:15/00/35)

Basic concepts and fundamental laws, force, moment and couple, resolution of force, resultant, Lami's theorem, free body diagram, two force and three force members, surface friction, Types of loads, types of supports, analysis of simple and compound beams, bending moment and shear force digrams, centroid, moment of inertia of plane and composite figures, Modulus of Elasticity, Hook's law, stress and stain relationship.

AE 2101 GIS & Remote Sensing (2:15/30/55)

Theory: Introduction to GIS: Historical development of GIS, Applications of GIS, Components of GIS, Data management in GIS, Mapping concepts: Basics of Cartography and Map Reading. Map projections and Coordinate systems, Introduction to remote sensing: Historical development of RS, Applications of RS, Principles of electromagnetic energy, Satellites and sensors, Remote sensing techniques.

Practical: Basic functions and applications in ArcGIS software**,** Introduction to ArcCatalog**,** Georeferencing and Digitizing**,** Introduction and applications of GIS & RS tools**,** Thematic mapping & Case studies in spatial decision making.

AE 2201 Irrigation and Water Management (2:15/30/55)

Basic soil water concepts, Physical Properties of Soil: texture, structure, density, porosity and water content. Soil water Potential, components, soil water retention curves. Water Movement in the Soils. Soil moisture constants, Measurements of soil moisture. Infiltration, factors affecting infiltration. Determination of bulk density, determination of hydraulic conductivity, infiltration rate. Evapotranspiration, measurement and estimation of evapotranspiration, crop water requirement, Irrigation requirements, Irrigation schedules, Effective rainfall. Measurement of irrigation water, sources of irrigation. Irrigation Systems: irrigation system network, major canal and headworks. Irrigation efficiencies and water use efficiencies. Irrigation methods: Border irrigation, Furrow irrigation, Basin and sub irrigation, Sprinkler irrigation, Drip irrigation. Needs and benefits of drainage.

AE 2202 Environmental Engineering (2:15/30/55)

Introduction to environment, environmental ethics, natural resources: air, water and land resources, problems to natural resources, renewable and non-renewable energy sources, management of natural resources, introduction to environmental pollution: air, water, land, noise and thermal pollutions, global and national environmental issues, liquid waste: types, effects of wastewater on environment, treatment technologies, solid waste: types, effects of solid waste on environment,

solid waste management, human impact on environment and its consequences and introduction to Environmental Impact Assessment (EIA).

AE 3101 Fundamentals of Electronics and Instrumentation (2:15/30/55)

Basic concepts and terminology in Electronics, Introduction to Semiconductors, Semiconductor Devices, Types and Characteristics of Transistors (BJT, FET), Applications of Transistor, Types and Characteristics of Diodes, Applications of Diodes, Introduction to Number systems and Logic gates, Fundamentals of Sensors, Transducers and Actuators, Introduction to control systems.

AE 3102 Engineering Technologies for Agriculture (1:00/30/20)

Farm machinery and tractor training, Irrigation technologies, Environmental management technologies, Hydrology based technologies, Geospatial and surveying applications for agriculture, Precision technologies for agriculture, Applications of farm structural designs.

5.1.1.5 Subjects Offered by the Department of Animal Science

The Department of Animal Science educates the undergraduates on farm animal production and processing techniques, and fisheries and aquaculture. The department facilitates scientific research and development for sustainable production of quality farm animal products and of fishes for food and recreational values without challenging the environment and jeopardizing the health and wellbeing of farm animals. It also provides educational leadership and inspiration through well-organized courses on animal physiology, animal nutrition, management of farm animals, aquaculture, livestock breeding, and meat and dairy sciences to effectively respond to the challenges faced by the global animal industries. The human resources of the department are also engaged in conducting outreach programmes to impart the technical knowledge and skills to the farmers and general public in the region.

Serial Number	Course Notation	Courses	Credit Units
1.	AS 1101	Livestock Production and Agrostology	(2:15/30/55)
2.	AS 1201	Anatomy and Physiology of Farm and Aquatic Animals	(2:15/30/55)
3.	AS 2101	Applied Animal Nutrition	(2:15/30/55)
4.	AS 2102	Management of Monogastric Animals	(2:15/30/55)
5.	AS 2201	Management of Ruminants	(2:15/30/55)
6.	AS 2202	Fisheries and Aquaculture	(2:15/30/55)
7.	AS 3101	Practices in Farm Animal Production	(2:00/60/40)

AS 1101 Livestock Production and Agrostology (2:15/30/55)

Importance and current status of livestock industry in Sri Lanka, Livestock feed industries, Dairy production systems in different agro-climatic zones of Sri Lanka, Recommendations for the improvement of livestock industry in Sri Lanka, Potential and constraints for pasture production in different agro-climatic zones of Sri Lanka, Agronomic description of common pasture, fodder and legumes species, Establishment and management of pasture and legumes, pasture under coconut, mixed pastures, role of legumes in pasture production, Estimation of quantity and quality of forage, Conservation and management of herbage.

AS 1201 Anatomy and Physiology of Farm and Aquatic Animals (2:15/30/55)

Introduction, Anatomy and Physiology of Circulatory system, Anatomy and Physiology of Respiratory system, Anatomy and Physiology of Urinary system, Anatomy and Physiology of Nervous system, Anatomy and Physiology of Ruminant and non- ruminant Digestive system, Anatomy and Physiology of male and female Reproductive system, Spermatogenesis, sperm maturation and sperm capacitating, Anatomy and Physiology of mammary gland and Endocrine system, Basic concepts in immunology and vaccines for farm animals, Anatomy and Physiology of poultry and aquatic animals.

AS 2101 Applied Animal Nutrition (2:15/30/55)

Principles of nutrition; Analysis of nutrients and feedstuffs: sampling for analysis, proximate analysis, Gastrointestinal tract and nutrition: anatomy and function of the GI tract of livestock and fish, rumen digestion, Nutrient metabolism in ruminants and non-ruminants: water, carbohydrate, lipids, protein and amino acids, energy metabolism, minerals, vitamins; Feedstuffs: classification of feedstuffs, feed additives, anti-nutritional factors; Feed formulation, Dairy cattle nutrition: utilization of metabolizable energy, feed and feeding standards during reproduction and lactation, sources of protein and other nitrogen compounds, evaluation of protein, synthesis and estimation of microbial protein and by-pass protein, Goat and sheep nutrition; nutrition during pregnancy, lactating, breeding, weaning of kids, feeding of growers.

Swine nutrition: nutrition during pregnancy, pregnancy anabolism, nutrition of lactating sow, breeding boar, weaning of piglets, feeding of growers and finishers, Poultry nutrition: importance of calorie to protein ratio, feeding at different stages of growth; Rabbit nutrition; Nutritional requirements of farmed fishes: basic principles of fish nutrition, role of carbohydrate, fat, protein, mineral and vitamins.

AS 2102 Management of Monogastric Animals (2:15/30/55)

Poultry management: Introduction; Poultry breeds; Brooding practices; Management of layers: growing, pullet and laying periods, Management of broiler chickens: housing, feeding, temperature and light management, ventilation, culling practices, vaccination, litter management, debeaking, record keeping and other special management practices, Breeder management; Management of duck and

turkeys for egg and meat purposes; Swine management, Introduction; Swine production systems; Swine breeds; Economic traits and selection; Feeding: creep feeding, feeding orphan pigs, flushing; Housing; Breeding; Weaning; Management practices during pregnancy and farrowing; Castration; Common reproductive problems; Common health problems and control measures; Rabbit management. Introduction; Rabbit breeds; Housing; Feeding; Breeding; Kindling; Weaning; Handling Rabbits; Sexing rabbits; Identification method; Castration; Common health problems and control measures.

AS 2201 Management of Ruminants (2:15/30/55)

Cattle and Buffaloes: Breeds and selection criteria for different farming situations, Care at parturition, Management of calf, heifer, pregnant cow, milking cow and dry cow, Management stud bull and beef cattle management, Disease control, preventive measures and treatment, Management of buffalo, establishment and operation of a dairy farm and beef ranch.

Goat and sheep: Importance, characteristics of breeds, potential and problems of sheep rearing in Sri Lanka, Sheep rearing system systems of rearing and housing, Disease control, feeding of young and adult stock of goat and sheep, Effect of climate on livestock production.

AS 2202 Fisheries and Aquaculture (2:15/30/55)

Overview of global and local fisheries and aquaculture; Importance of fisheries and aquaculture; Aquatic resources of Sri Lanka: Reservoirs, lakes, estuaries, lagoons; Important fish species of Sri Lanka; General principles of aquaculture: Definition, intensity of aquaculture, types of aquaculture systems – static, open, semi-closed, and recirculating systems; Species selection; Water quality: water quality parameters and their impacts on aquaculture, water quality management; Types and elements of fish ponds and pond fish culture; Fish propagation: Oogenesis and spermatogenesis, induced breeding of carps; Major fish diseases and their management in aquaculture.

AS 3101 Practices in Farm Animal Production (2:00/60/40)

Hands-on practices: management of cattle, buffalo, goat, sheep, chicken, duck, quails, turkey, swine and rabbits, management of aquaculture ponds, Hands-on practices in establishment of pasture and fodders, Hands-on practices in processing of dairy and meat products, Field study to identify technical and socioeconomic problems in small- and medium-scale livestock, poultry and aquaculture farms, Field study to analyze costs and benefits of livestock, poultry, Exposure visits to commercial livestock, poultry, and fish farms and breeding, Seminars to present the observations and suggestions to improve the present farm animal production.

5.1.1.6 Subjects Offered by the Department of Crop Science

Crop Science is one of the basic disciplines in the Agriculture and thus represents the core of the Faculty of Agriculture. In principle, the Department of Crop science deals with agronomic, ecological and harvesting aspects of all plant species which are of nutritional, industrial, medicinal and environmental importance. Major emphasis is placed in maintaining an appropriate balance between farming and environment with the aim of conserving the environment while sustaining the crop productivity under constantly changing socio-economic needs. The Department consists of a teaching laboratory, research laboratory, plant tissue culture laboratory and crop farm which are modestly equipped to cater to the ongoing teaching and research programmes of the Department.

Serial Number	Course Notation	Courses	Credit Units
1.	CS 1101	Principles of Crop Production	(2:15/30/55)
2.	CS 1102	Seed Science and Technology	(1:10/10/30)
3.	CS 1201	Principles of Horticulture	(2:15/30/55)
4.	CS 1202	Plantation Crop Production	(1:15/00/35)
5.	CS 1203	Agroforestry	(1:15/00/55)
6.	CS 2101	Floriculture and Landscape	(2:15/30/55)
7.	CS 2102	Introductory Statistics	(2:30/00/70)
8.	CS 2201	Agronomy of Field Crops	(2:30/00/70)
9.	CS 2202	Fruit and Vegetable Production	(1:15/00/35)
10.	CS 3101	Crop Production Technology	(3:00/90/60)
11.	CS 3102	Design and Analysis of Experiments	(2:30/00/70)

CS 1101 Principles of Crop Production (2:15/30/55)

Introduction to Agriculture, Importance of crop production, Introduction to major sectors of agriculture, Agro-climate and Agro-Ecological Zones of Sri Lanka, Agronomic classification of crops, Factors influence crop production, Plant nursery management techniques, Crop establishment techniques and field management, Crop Fertigation, Weed and weed management strategies, Composting, Traditional and modern crop production technologies, Plant population and geometry, Crop growth and development and Crop Growth Analysis, Yield attributes and yield improvement.

CS 1102 Seed Science and Technology (1:10/10/30)

Introduction, Aims and role of seed technology, Importance of seeds and their uses, Flowering and seed formation, Stages of seed development, Factors affecting seed development, Characteristics of good seed, lifespan of seeds (seed longevity), Dormancy, Physiology of germination, Seed viability, Seed and seedling vigour, Distinction among viability, vigour and dormancy, Seed deterioration, Classes of seeds, Seed production techniques in self and cross-pollinated crops and storage.

CS 1201 Principles of Horticulture (2:15/30/55)

Introduction to Horticulture, Plant propagation of Horticulture crops, Vegetative propagation techniques – cutting, grafting, budding and layering, Specialized Horticultural practices like notching, girdling, bending, ringing, thinning, root pruning etc. Use of plant growth regulators, Vegetative reproducing structures, Nursery management, Introduction to pomology and olericulture.

CS 1202 Plantation Crop Production (1:15/00/35)

Introduction, Ecological requirements, Agronomy and processing of Tea, Rubber, Coconut and minor export agricultural crops of Sri Lanka.

CS 1203 Agroforestry (1:15/ 00/55)

Introduction, Definitions, concepts and role of agroforestry, Classification and characteristics of agroforestry systems and practices, Multipurpose trees and shrubs, Species selection, interactions in tree-crop systems, Designing, sustainable management and evaluation of agroforestry, Forest farming, Social forestry practices, Agroforestry practices in Sri Lanka.

CS 2101 Floriculture and Landscape (2:15/30/55)

Introduction floriculture and landscaping industry in Sri Lanka, Cultivation and post-harvest management of selected cut flowers and ornamental foliage plants, Importance of landscaping, Principles and elements of landscaping, Selection of suitable soft and hard landscape materials, Landscape designing.

CS 2102 Introductory Statistics (2:30/00/70)

Importance of statistics, Sampling methods, Frequency distribution, Central tendency and dispersion, Probability distributions, Hypothesis test-one sample and two samples, Chi-square test, Simple linear regression and correlation, Analysis of variance.

CS 2201 Agronomy of Field Crops (2:30/00/70)

Present status and importance of field crops in Sri Lanka, Classification of field crops, Ecological requirements of field crops, Agronomic management of field crops, Current research and research gaps in field crops.

CS 2202 Fruit and Vegetable Production (1:15/00/35)

Modern practices of fruit and vegetable production; Fruit and vegetable based cropping systems; Physiological basis of vegetable crop growth; Fruit and vegetable crop improvements; Fruit and vegetable marketing and exports; Institutional support for fruit and vegetable sub sector.

CS 3101 Crop Production Technology (3:00/90/60)

In this course, each student will be allotted a plot depending upon the availability of the resources for raising suitable crops of the dry zone during *maha/yala* season as recommended by the course teacher. The plot will be given from the time of preparation of land until the harvest of crop. Each student will carry out all important field operations independently or in-group under the supervision and guidance of the course teacher. Students will be visiting the nearby agricultural villages for field observation of cultivation systems adopted by the farmers, technical and socio-economic constrains of cultivation of crops and reasons for adopting or not adopting latest technologies. The student will have to work in his/her allotted plot in regular specified credit hours and during spare time as per requirement of the agricultural operations for the crop in time. A report should be submitted at the end of the semester for evaluation. In addition, students will visit to agricultural institutions, research stations and other agricultural support service centre and they will have to submit individual report on field visit as a part of farm practice course.

CS 3102 Design and Analysis of Experiments (2:30/00/70)

Principles of experimental designs, Completely Randomized Design, Randomized Complete Block Design, Latin Square Design, Mean separation procedures, Factorial experiments, Modifications to factorial experiments, Analysis of Covariance, Confounding in factorial experiments, Incomplete Block Designs.

5.1.2 Principle Subjects During Advanced Programme

The advanced programme of the Bachelor of Science Honours in Agriculture degree will be commenced since sixth semester. The students' interest or the overall performance in all courses delivered by each department up to fifth semester could be considered while dividing the students in to six departments for specialization. Advanced courses provide in-depth knowledge and skills, unique to a particular discipline. A student should complete 37 credits including 3 NGC and 2 audit credits during advanced programme. In 6th and 7th semesters a student should select 12 and 08 credit units respectively offered by the department in which he/ she is going to specialize. In 8th semester student should do 6 credited research project relevant to his/her specializing department under the supervision of senior lecturer/s from the department in which he/ she is going to specialize.

5.1.2.1 Subjects Offered by the Department of Agricultural Biology

The Department of Agricultural Biology offers the advanced courses in the fields of Plant Physiology, Genetics, Crop Breeding, Plant Pathology, Agricultural Microbiology, Applied Entomology, Pest Management and Molecular Biology. The programme integrates skills and knowledge to solve problems related to plants, insects, and microbes in natural and managed ecosystems. The specializing students are provided with the opportunity to familiarize in biological science with the national level research undertaken with the unique opportunity of working with ultra-modern, high-tech equipment. The specializing students have numerous

career options to pursue. The advanced curriculum provides the pathway for the development of entrepreneurship.

Serial Number	Course Notation	Courses	Credit Units
1.	AB 3201	Plant Resistance to Pest	(2:15/30/55)
2.	AB 3202	Plant Molecular Biology	(2:15/30/55)
3.	AB 3203	Breeding Strategies of Economically Important Crops	(2:15/30/55)
4.	AB 3204	Water Relations of Plants	(2:15/30/55)
5.	AB 3205	Plant Pathology	(2:15/30/55)
6.	AB 3206	Recombinant DNA Technology	(2:15/30/55)
7.	AB 3207	Productive Entomology	(2:15/30/55)
8.	AB 3208	Applied Microbiology	(2:15/30/55)
9.	AB 3209	Introductory Nematology	(2:15/30/55)
10.	AB 3210	Insect Morphology	(2:15/30/55)
11.	AB 3211	Plant Disease Diagnosis	(2:15/30/55)
12.	AB 4101	Advanced Plant Physiology	(2:15/30/55)
13.	AB 4102	Clinical Plant Pathology	(2:15/30/55)
14.	AB 4103	Advanced Plant Pathology	(2:15/30/55)
15.	AB 4104	Insecticide Toxicology	(2:15/30/55)
16.	AB 4105	Biological Control of Insect Pests	(2:15/30/55)
17.	AB 4106	Plant Genetic Resources and Conservation	(2:15/30/55)
18.	AB 4107	Quantitative Plant Breeding	(2:15/30/55)
19.	AB 4108	Plant-Microbe Interactions	(2:30/00/70)
20.	AB 4109	Microbial Biotechnology	(2:15/30/55)
21.	AB 4110	Plant Virology	(2:15/30/55)
22.	AB 4111	Production of Genetically Modified Organisms and its Biosafety	(2:30/00/70)
23.	AB 4112	Molecular Plant Breeding	(2:15/30/55)
24.	AB 4113	Stress Physiology	2:15/30/55)

AB 3201 Plant Resistance to Pest (2:15/30/55)

Theory: Insect-plant relations, Types of plant resistance, Introduction, historical aspects and concept of host plant resistance, Mechanisms of resistance, Bases of resistance, Insect-plant coevolution, Insect-resistant biotech crops and their impacts on beneficial arthropods, Plant-induced Systemic Resistance / Jasmonic acid and Plant Defense, Plant Trichomes, Salicylic acid and Plant defense, Host Plant Selection by phytophagous insects and Factors affecting host plant resistance and Host plant resistance in IPM.

Practical: Biophysical characteristics of Plants, Oriental response of insects and host preference of pests, Repellence effect of plant extracts against insect pests, Screening of plant resistant varieties based on morphological characteristic, Grading of rice varieties against pest damages and Plants Antioxidants Capacity.

AB 3202 Plant Molecular Biology (2:15/30/55)

Theory: Overview of biomolecules in plants, plant genome and genes; nuclear, mitochondrial and chloroplast DNA, central dogma of molecular biology, DNA replication and repair, Gene expression and regulation, transcription and posttranscriptional modification, translation, translation and posttranslational modifications, protein folding and transport, control of plant developmental and physiological processes at molecular level, Molecular mechanisms of plant response to biotic and abiotic stresses, RNAi in plants and its application, Molecular tools in plant molecular biology.

Practical: UV visible spectroscopy, Chromatographic methods in plant molecular studies, Conventional and kit based plant DNA extraction, RNA extraction from plant tissues, Polymerase chain reaction using universal primers in plants, Quantification and quality analysis of DNA and RNA from plants, Techniques to isolate and characterize novel plant genes, RNA-Seq for transcriptome analysis in plants, RT-PCR for gene expression studies, Localization techniques to study gene and protein expression in plants, Protein extraction and purification from plants.

AB 3203 Breeding Strategies of Economically Important Crops (2:15/30/55)

Theory: Breeding strategies; both traditional and modern approaches for the improvement of economically important field, vegetable and fruit crops.

Practical: Visiting research stations and institutes to understand the breeding procedures, get to know the ongoing breeding programs and have hands-on experience on different breeding techniques.

AB 3204 Water Relations of Plants (2:15/30/55)

Cell water relations, Mechanism of osmosis, osmotic adjustment, absorption of water, factors affecting water absorption through roots, Efficiency of root systems in absorption, resistances to water movement in the soil-plant system, soil vs root resistance, environmental factors influencing absorption of water, energy relations, resistances to diffusion, water relations during drought, Effects of water stress on plants.

AB 3205 Plant Pathology (2:15/30/55)

Theory: Introduction of plant pathology; Plant disease epidemiology; Mechanisms by which pathogens attack plants; Defense mechanisms of plants against pathogens; Stages in the development of plant disease; General approach to plant disease management and control; Environmental effects on the development of plant diseases; Effects of pathogens on plant physiology; Genetics in plant disease; Crop loss assessment.

Practical: Acquaintance with various laboratory equipment and microscopy; Preparation of media; Isolation and purification of fungi and bacteria; General study

of different structures of fungi; Study of representative fungal genera; Study of symptoms of various plant diseases; Staining and identification of plant pathogenic bacteria; Assessment of crop yield losses.

AB 3206 Recombinant DNA Technology (2:15/30/55)

Theory: Introduction Recombinant DNA Technology, Agricultural importance, Structure and functions of DNA and RNA molecules, Genes and genomes: Generalized structure of genes and the differences between prokaryotic and eukaryotic genes, Overview of cloning and manipulation nucleic acids; Introduction to DNA manipulative enzymes nucleases, ligases and modifying enzymes, Manipulating nucleic acids: restriction enzymes and its types, Manipulating nucleic acids: Ligation, mode of action of ligase, linkers and adapters, Cloning vectors and hosts for expressing recombinant proteins; vectors for prokaryotic and eukaryotic cells (pBR322, pUC8, phage vectors), Cloning vectors for higher plants, Transformation and transfection, Selection of recombinant cell, Genomic and cDNA libraries, Restriction mapping and sequencing of DNA, Polymerase chain reaction (PCR) and variants of PCR, Gel electrophoresis, Blotting techniques.

Practical: Safe laboratory practices for recombinant DNA technology, Introduction to pipetting, Basic steps in DNA separation, Extraction of Genomic DNA from Bacteria (E. coli), Extraction of plasmid DNA from Bacterial culture, Quantitative analysis of DNA, Agarose Gel electrophoresis, Isolation and quantification of DNA from plant tissue, Isolation and quantification of DNA from plant tissue, Restriction digestion, Ligation of DNA fragments, Restriction mapping, Selection of recombinant cells, Southern and northern transfer techniques.

AB 3207 Productive Entomology (2:15/30/55)

Theory: Beekeeping: Bee species, biology of such social insects, beehive, pests and diseases of honeybee, honey separation and quality confirmation of honey. Sericulture: Biology of *Bombyx mori*, threats to the sericulture production of silk. Lac culture: Biology of lac insects, culturing of lac insect and threats to lac culture. Other beneficial insects.

Practical: Beekeeping, Seri culturing and other beneficial insects.

AB 3208 Applied Microbiology (2:15/30/55)

Biology of mushroom; Mushroom production process: spawn production, substrate preparation, different types of mushrooms, insect disease management, health and safety; entrepreneurial skills and economics for small enterprise; Food related microorganisms; Production of single cell protein; Microbial pesticides; Biological control of plant diseases; *Trichoderma*: Mass production, formulation, quality control, delivery and its scope in management of plant diseases.

AB 3209 Introductory Nematology (2:15/30/55)

Introduction to plant parasitic nematodes, Morphology and anatomy of nematode; inner body tube, esophageal glands of nematode, male reproductive system of nematode, biology, taxonomy and classification of plant parasitic nematode, identification of important parasitic nematodes, entomophilic nematodes, economic importance of plant parasitic nematodes; Different methods of Nematode Control; Integrated Nematode Management.

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.

AB 4101 Advanced Plant Physiology (2:15/30/55)

Plant hormones, methods of biological and chemical assay for auxin, biosynthesis and metabolism of IAA, physiological effects, mechanism of IAA action, Gibberellins- Occurrence and distribution, Metabolism and action, GA and growth, Abscisic acid- Bioassay and physical methods of measurement, effects of Abscisic acid on growth, biosynthesis. Circadian rhythms, endogenous and exogenous control of rhythms, rhythms of CO_2 metabolism, Effects of light and temperature on photosynthesis, pigments of photosynthesis, types and occurrence, phytochrome as a photoreceptor.

AB 4102 Clinical Plant Pathology (2:15/30/55)

Theory: Economic significance of clinical plant pathology; Sterilization of laboratory items; Isolation of plant pathogens; Culturing of microorganisms; Storage of

microorganisms; Identification of plant pathogens; Inoculation of pathogens; Microscopic techniques; Plant disease diagnostic techniques.

Practical: Different sterilization techniques; Different isolation techniques of phytopathogens; General and special culture media formulation; Preservation techniques of the cultures; Different inoculation techniques of the phytopathogens; Quantification of fungi and bacteria.

AB 4103 Advanced Plant Pathology (2:15/30/55)

Theory: Phyto-pathological concepts; Biochemical and molecular basis of pathogenesis and virulence; Biochemical aspects of plant defence mechanisms; Molecular diagnostic methods of plant pathogens; Integrated disease management; Postharvest pathology; Study of fungicides and their formulations; Current trends in plant pathology.

Practical: Koch's postulates; Study of components of integrated disease management; Study of postharvest symptoms on fruits and vegetables; PCR based identification of pathogenic fungi and bacteria; Quantification of plant defense enzymes; Calculation of fungicide sprays concentrations; Determination of FEIQ of pesticides.

AB 4104 Insecticide Toxicology (2:15/30/55)

Theory: Historical aspects of insecticides, major groups of insecticides (older and newer), mode of action of insecticides, chemical nature of insecticide groups, selection of insecticides in IPM, environmental impact of insecticides; resistance development in insects, insecticides residues, pest resurgence, and degradation of insecticides.

Practical: Identification and classification of various insecticides, laboratory bioassay methods to assess the insecticide toxicity, topical application of insecticide to measure LD50, testing the phyto-toxicity of an insecticide, efficiency of an insecticide against different insects, preparation and formulation of different dose of botanical insecticide and LD50 of a botanical insecticide.

AB 4105 Biological Control of Insect Pests (2:15/30/55)

Theory: Bio-control agents, bio-control strategies; classical, augmentation and conservation, mode of action of microbial insecticides, commercial products of bio-control agents, integrated biological control, genetic improvement of bio-control agents, multitrophic interaction.

Practical: Identification of native bio-control agents, mass culturing of bio-control agents, efficiency testing against different insect pests.

AB 4106 Plant Genetic Resources and Conservation (2:15/30/55)

Theory Introduction; Basic principles on plant genetic resources conservation; Strategies of plant genetic resources conservation; choice of conservation strategies; Species vs habitat or ecosystem-based conservation; In situ conservation; Ex-situ conservation; Institutes involved in plant genetic conservation; Design and management of gene bank facilities.

Practical: Crop wild relatives and their importance, mechanism and procedures for acquiring new planting material, Local and international mechanisms for conservation and use of genetic resources, Germplasm databases and informatics, A training program at the Plant Genetic Resource Centre, Gannoruwa.

AB 4107 Quantitative Plant Breeding (2:15/30/55)

Theory: Population genetics review; Continuous and discrete variation; Quantitative and qualitative characters; Environmental effects; Genetic and environmental variances; Additive, dominance, epistasis and cytoplasmic effects; Relationships and genetic diversity: Heterosis / Hybrid vigour, Heritability, G×E correlations and an introduction to creating base population, line development and variety development.

Practical: Calculations (problems) on population genetics, quantitative genetic variation, phenotypic correlations, additive genetic correlations, genetic gain, heritability, genotype by environmental interaction and introduction to plant breeding software and hands-on practical sessions.

AB 4108 Plant-Microbe Interactions (2:30/00/70)

Introduction to plant-microbe introduction; Host-pathogen recognition: Beneficial interactions, Life of microbes in the rhizosphere: Interactions between organisms in the rhizosphere, Communication between organisms by chemical signaling; Legume-Rhizobia symbiosis; PGPR; Mycorrhiza; Microbial biofilms and quorum sensing: Quorum sensing in plant-associated biofilms; Bacterial volatiles as airborne signals for plants and bacteria; Pathogenic systems: Fungal, Bacterial and Viral pathogenicity; Plant pathogenic fungi and oomycetes: Fungal and oomycetous infection strategies and host defense mechanisms; Virus Interference with host plants, Mechanisms of disease resistance; Recent developments in plant-microbe interactions.

AB 4109 Microbial Biotechnology (2:15/30/55)

Fundamentals of Microbial Biotechnology; Microbial inoculants: Selection and establishment of nitrogen fixing bacteria, production of *Rhizobium*, *Azotobacter*, *Azospirilla*, and other nitrogen fixing bacterial cultures; Quality control of bio inoculants; Microbial fertilizer: Phosphate solubilizing bacteria; mycorrhiza; plant growth promoting rhizobacteria; Biocontrol microbial inoculants; Techniques in Microbial Biotechnology: Isolation of industrially important microorganism from

different sources using specific substrates; Bioremediation: process and microorganisms involved; Recent advances in application of microbial biotechnology in crop protection.

AB 4110 Plant Virology (2:15/30/55)

Theory: Structure, nomenclature and taxonomy of plant viruses; Transmission of plant viruses; Replication of viruses; Plant viral diseases: Identification and Control; Detection techniques: Conventional, immunological and molecular biological; Viroids and phytoplasma.

Practical: Study of symptoms of various plant viral diseases; Transmission of plant viruses; Methods of detection of various plant viral diseases; Methods of plant viral disease measurement; Study of plant viral disease management.

AB 4111 Production of Genetically Modified Organisms and its Biosafety (2:30/00/70)

Cis genesis and transgenesis, production of transgenic organisms and its various applications in food and agriculture, pharmaceuticals and other indstries, genetically modified organisms (GMOs)/ living modified organisms (LMOs); introduction and its types, risk and concerns, biosafety regulations in Sri Lanka, Cartegena protocol, risk assessments, management and handling, biosafety policy containment/confinement practices Sampling, detection, identification and quantification of GMOs.

AB 4112 Molecular Plant Breeding (2:15/30/55)

Theory: Overview of conventional breeding strategies and their pitfalls, Importance of molecular plant breeding, Molecular markers and its applications in plant breeding, Characteristics of an ideal marker, Marker-assisted selection, Marker-assisted backcrossing, gene pyramiding, Transgenic crops and *Agrobacterium*-mediated transformation; screening transgenic plants, Production of doubled haploids, Targeting induced local lesions in the genome (TILLING) and Eco TILLING in mutation breeding, Effects of plant genomics on molecular breeding in economically important crops, Genome editing using CRISPR/cas 9, genomic selection.

Practical: Plant DNA extraction, Agarose gel electrophoresis, DNA quantification, Practical applications of different markers (RAPD, RFLP, SSRs, STRs, AFLP, SNPs) in different scenarios (Breeding abiotic/ biotic stress plants, selecting quality characters), Populations in plant breeding, production of doubled haploids, DNA fingerprinting using SSR or RAPD, Practical issues in molecular plant breeding; case studies and a published research-based approach, General protocols for TILLING and Eco TILLING.

AB 4113 Stress Physiology (2:15/30/55)

Biological stress and biological strain, stressful environments- Desserts and other dry areas, Tundras and cold areas, Drought stress, effects of drought on growth and yield, on ultrastructure, on photosynthesis. Nitrogen metabolism under water stress, Hardening (Acclimation). Mechanisms of drought resistance, Temperature stress, Effects on membranes, effects on root processes, Lower temperature limits for survival and growth, High temperature stress, Heat resistance in plants. Salt stress and salt resistance, Acidic soils.

5.1.2.2 Subjects Offered by the Department of Agricultural Chemistry

The Department of Agricultural Chemistry offers advance courses in the discipline of Food Chemistry, Food Technology, Human Nutrition, Value Addition of Foods, Soil Fertility and Environmental Soil Science. The Department has well equipped laboratories to conduct research and a pilot plant for commercialization of the research outputs. During this programme, the students are assigned to undergo intensive in-plant training in leading Industries and Research Institutes. The students are guided to carry out assignments where they can integrate knowledge in the identification, description, analysis and solution to the problem within the area of specialization.

Serial Number	Course Notation	Courses	Credit Units
1.	AC 3201	Natural Resources and Soil Fertility	(2:15/30/55)
2.	AC 3202	Advanced Soil Science	(2:20/20/60)
3.	AC 3203	Applied Soil-Plant Microbe Interaction	(2:15/30/55)
4.	AC 3204	Introduction to Soil Biochemistry	(2:15/30/55)
5.	AC 3205	Principles of Instrument Analysis and Techniques in Soil Research	(2:15/30/55)
6.	AC 3206	Soil Fertility Evaluation and Fertilizers	(2:30/00/70)
7.	AC 3207	Food Chemistry	(2:15/30/55)
8.	AC 3208	Food Microbiology	(2:15/30/55)
9.	AC 3209	Food Analysis	(2:15/30/55)
10.	AC 3210	Postharvest Technology of Agricultural Commodities	(1:15/00/35)
11.	AC 3211	Processing Technology of Crop Commodities	(2:15/30/55)
12.	AC 3212	Dietetics	(2:15/30/55)
13.	AC 4101	Soil Conservation and Environmental Quality	(2:15/30/55)
14.	AC 4102	Land Evaluation and Land Use Planning	(2:30/00/70)
15.	AC 4103	Biology of Soil Eco-System	(2:15/30/55)
16.	AC 4104	Problematic Soil Management	(2:20/20/60)
17.	AC 4105	Soil and Nutrient Management for Sustainability in Agro Ecosystems	(2:30/00/70)
18.	AC 4106	Soil Pollution and Control Strategies	(2:30/00/70)

19.	AC 4107	Soil Quality and Health	(2:15/30/55)
20.	AC 4108	Food Safety and Quality Control	(2:30/00/70)
21.	AC 4109	Food Process Engineering	(1:15/00/35)
22.	AC 4110	Bio Processing Technology	(1:15/00/35)
23.	AC 4111	Processing Technology of Animal Commodities	(2:15/30/55)
24.	AC 4112	Community Nutrition	(2:20/20/60)
25.	AC 4113	Applied Human Nutrition	(2:15/30/55)

AC 3201 Natural Resources and Soil Fertility (2:15/30/55)

Evaluating soil health: The key aspects of soil biology, chemistry and physics that influence growth of horticultural and agricultural crops and pastures. Interactions between soil biological, chemical and physical factors, and best management practice of soils for sustainable production.

AC 3202 Advanced Soil Science (2:20/20/60)

Solute transport, transport and degradation of dissolved and particle-bound substances in soil water, wetting and non-wetting properties of soils, surface free energy of soil, adhesion s. cohesion, tillage and soil structure management, soil compaction, importance of soil water management, water shortage and conservation, monitoring and maintaining the soil moisture. Colloidal chemistry of soil constituents, Adsorption, desorption, double layer theory, zeta potential, balance of repulsion and attractions pH buffering and buffer system. The complex interplay among organic and inorganic solids, air, water, microorganisms and plant roots in soil.

AC 3203 Applied Soil-Plant Microbe Interaction (2:15/30/55)

Soil organic matter: plant residue decomposition and nutrient release, mineralization and immobilization of nutrients. Microbial ecology, microbes in nutrient cycle important to agriculture, plant microbe interactions in the rhizosphere, bacterial fertilizers, composting, waste disposal.

AC 3204 Introduction to Soil Biochemistry (2:15/30/55)

Soil biochemistry: its definition and scope, soil enzymes and enzyme kinetics, the microbial biomass and biochemistry, Biochemistry of carbon transformation in soil, biochemistry of nitrogen transformations in soil, biochemistry of metal transformations in soil, biochemistry of Xenobiotics in soil, biochemistry of biologically active materials in soil.

AC 3205 Principles of Instrument Analysis and Techniques in Soil Research (2:15/30/55)

Instrumental methods of chemical analysis: The main basics, Advantages, classification. Potentiometry, Electrophoresis, Conductometry, Colorimetry, spectroscopy, flame photometry, Atomic absorption spectrophotometry,

Chromatography, Nuclear chemistry, Radioactivity. Safety measures in laboratories, basic principles of analytical methods, analytical procedures to obtain data, methods of chemical separation, measurements. Modern analytical methods used for soil quality testing, soil testing for plant available nutrients, determination of environmental pollutants and the specific methods for the water analysis.

AC 3206 Soil Fertility Evaluation and Fertilizers (2:30/00/70)

Soil testing, modern approaches in soil fertility evaluation and fertilizers and classification, principle of fertilizer application, methods of fertilizer application, integrated plant nutrient management: objectives, components and importance, soil testing and fertilizers recommendations and management.

AC 3207 Food Chemistry (2:15/30/55)

Introduction to food chemistry, societal role of food chemists, properties of water and ice, water activity, moisture sorption isotherms, monosaccharaides and monosaccharaide reactions, non- enzymatic browning, polysaccharides and polysaccharides reactions, Gelatinization of starch, nomenclature, physical aspects and chemical aspects of lipids, lipolysis, auto-oxidation and thermal decomposition of lipid, proteins, pigments, food-flavors, food enzymes, food additives effect of processing, cooking and storage environment on food components.

AC 3208 Food Microbiology (2:15/30/55)

Food as a substrate for microorganisms, factors influencing the growth of microbes in food. Microorganisms important in food microbiology, Molds: classification, yeasts and yeast like fungi, bacteria, industrial importance mold, yeast and bacteria, principles of food spoilage, causes of spoilage food fermentations: Bread, Traditional fermented foods, Malt beverages, wine, distilled liquors, vinegar, fermented vegetables, fermented diary product, oriental fermented foods, contamination of foods, from green plants and fruits, from animals, from sewage, from soil, from water, from air, during handling and processing, food borne illness: infections and intoxicants, Myco-toxins, food borne parasites, seafood toxicants.

AC 3209 Food Analysis (2:15/30/55)

Introduction of food analysis, food sampling and sample preparation, evaluation of analytical data, pH and titratable acidity, determine acid content of food beverages, Basic principles of Spectroscopy, Introduction of UV Spectroscopy, Determine Food Protein Concentration with UV Spectroscopy, UV Spectroscopy and Instrumentation, Fluorescence Spectroscopy, concept and potential of for food applications. Infra-red, Determine chemical composition of the food samples, Electrophoresis, chromatography, Rheological principles for Food Analysis, Determine Viscosities of carbohydrate solutions.

AC 3210 Postharvest Technology of Agricultural Commodities (1:15/00/35)

Postharvest logistics for perishable crops, Marketing management for postharvest operations. Postharvest losses of fruits & vegetables, Post harvest Technology of Cut Flowers- Vase life vs Shelf Life, Extending the vase life of Cut Flowers and Packaging. Postharvest Technology of Animal Produce: Postmortem changes and Rigor Mortis. Icing of Fish, Slaughtering of Animals, Meat Tenderization and Freezing and Packaging. Pre-harvest and post-harvest problems in Cereals, Legumes, Pulses, Nuts and Spices. Drying, Storage and Packaging of Unperishable.

AC 3211 Processing Technology of Crop Commodities (2:15/30/55)

Processing of Wheat, Rice, Maize, Barley and Millets. Application of canning, dehydration and freezing technologies in Fruits and Vegetables processing, Processing of ready-to-use products from fruits and vegetables, Theories for preparation of fruit preserves, Fruits and Vegetables products for exports. Processing of Nuts, Legumes and Spices. Beverage Technology.

AC 3212 Dietetics (2:15/30/55)

Meal Planning Recommended Daily Allowance (RDA), Nutritional Needs of Various Age Groups. Diet Therapy. Opportunities and limitations for Dieticians in Sri Lanka. Role, Functions and conduct of Dieticians. Dietetics in relation to the needs of different social economic groups. Nutrition and Dietetics outreach.

AC 4101 Soil Conservation and Environmental Quality (2:15/30/55)

Soil and the environment, Understand the principles of soil erosion process and management, Erosion and sediment control, practices to decrease erosion, Soils as source of greenhouse gases, Nitrous Oxide Emissions, Ozone depletion, Carbon sequestration in soils, Soil management for carbon sequestration, Characterization of SOM, pools of SOM, Erosion, sediment, and soil conservation, deforestation, saline and Sodic Soils Causes and Remediation.

AC 4102 Land Evaluation and Land Use Planning (2:30/00/70)

Nature and principles of land evaluation, Land utilization and land use types, Land suitability and capability, Land suitability classification, Soil parameters of agricultural significance, Standards of evaluating soil parameters, Methods and techniques of evaluating soils: drain ability tests, infiltration, compaction, depth, Crop requirements from soils properties perspective, Crop selection for a land based on soil properties. Limitations and improvements of land qualities.

AC 4103 Biology of Soil Eco-System (2:15/30/55)

The Soil Food Web, The Food & Web Soil Health, the importance of the soil food web, what do soil organisms do, food sources for soil organism, where do soil organisms, live, bacteria, soil fungi, soil protozoa, nematodes, arthropods,

earthworms, interactions of earthworms with other members of the food web predators, herbivores.

AC 4104 Problematic Soil Management (2:20/20/60)

Acid soils courses, problems, and amelioration or management of soil acidity, Salt affected soils: classification and formation. Saline soils and their management: diagnosis, salinity problems, salinity classes and effect of salinity on crop growth. Alkali soils: Formation, characteristics, problems and reclamation or management of alkali soils. Field visits to identify problematic soils and to study management practices.

AC 4105 Soil and Nutrient Management for Sustainability in Agro Ecosystems (2:30/00/70)

Management of plant nutrients in agronomic systems, diagnosis of nutrient availability and prediction of crop response to fertilizers; interactions between nutrient response and chemical, physical and biological properties of soils. Avoiding environmental damage, practice of good soil management for Sustainable Agriculture and Environmental Protection. Submerged soil management. Soil constraints and environmental problems and their management on sustainably.

AC 4106 Soil Pollution and Control Strategies (2:30/00/70)

Soil contamination by chemical pollutants: sources and fate. Solid and Hazardous waste, Radioactive wastes. Phytoremediation Technologies (Phytoextraction, Rhizofiltration, Phytostabilization, Rhizodegradation, Phytodegradation, Phytovolatilization, Hydraulic Control, Vegetative Cover Systems, Riparian Corridors/Buffer Strips) bioremediation by microorganisms; contamination by inorganic (including heavy metals) and organic pollutants; factors affecting uptake of contaminants, prevention and elimination of contamination; landfills.

AC 4107 Soil Quality and Health (2:15/30/55)

Evaluation of soil quality factors or indicators. The impact of agricultural practices: cultivation and introduced soil chemicals on soil health. Measures to ameliorate the problems. Field visits to study the impact of farming on soil quality.

AC 4108 Food Safety and Quality Control (2:30/00/70)

Food Standards and Quality Control - Food inspections, Quality control in food industry, Role of quality controllers, Quality assurance, GMP, HACCP, ISO and laboratory accreditation, Total quality management in food industries, Science based quality management practices. Sensory Evaluation of Foods - Role of sensory evaluation in food industry, Food Packaging- Transport, cleaning and storage of raw materials, Storage systems, storage pests. Protection of food from pests.

AC 4109 Food Process Engineering (1:15/00/35)

Physical characteristics of food materials, Mass and energy balance, Rheology offoods, Viscoelastic behaviour and rheometers, Laminar and turbulent flow, Heat transfer, Food dehydration and drying, Psychrometrics, Equilibrium moisture content, Estimation of drying rates and time for dryer types, Properties of frozen foods, ice-crystal formation and freezing point dispersion, Cooling determination, Aero and hydrodynamic characteristics, Size reduction equipment/machines, Mechanical separation techniques,. Development of inoculant, kinetics of enzymatic and microbial processes, optimization studies, general principles of bioreactor design and their operation. Upstream Processing and Downstream Processing. Construction of Flow charts, Cost estimation & work force.

AC 4110 Bio Processing Technology (1:15/00/35)

Raw materials for bioprocessing, comparison of chemical and biochemical processing based on energetics and environmental issues. Production of antibiotics, Vitamins. Classification of and biochemistry of antibiotics, Microbial biomass, Single cell proteins and its nutritional values, Immobilization of cells and enzymes separation of solid and liquid phases, isolation and purification techniques for proteins and other products based on different physico-chemical properties. Bioprocess automation and application of computers in bioprocessing recombinant products with representative examples.

AC 4111 Processing Technology of Animal Commodities (2:15/30/55)

Dairy chemistry, Testing and quality control in milk products, Processing of fluid milk, Formulation of milk products, Processing and preservation of fish and fish products, Spoilage of fish products, Post harvest handling of Fish, Preservation of Fish, Products from krill, Food regulations relating to fish products, Utilization of seaweeds. Processing and preservation of meat and meat products, Quality and factors determining quality of poultry meat, Processing of egg products, Brief Overview of Mutton, Pork and Beef Industry.

AC 4112 Community Nutrition (2:20/20/60)

Global and Sri Lankan Nutrition Situation. Primary Healthcare, Health Information System in Sri Lanka, safe motherhood, nutritional well being, healthy living, clinical and public health, food habits, social and cultural influences on food choice. Nutritional Survey, Assessment of the nutritional status of community and interpretation of nutritional status data. Types of nutrition interventions and programs existent in Sri Lanka. Dietary recommendations and policies in Sri Lanka (Vitamin A, Iodine, Iron, HIV/AIDS, Infant feeding). Nutrition in complex emergency situations (During war and famine). Nutrition Education, Nutrition Surveillance, food security, food insecurity and vulnerability information and mapping system.

AC 4113 Applied Human Nutrition (2:15/30/55)

The nature and functions of major nutrients, The chemical and nutritional nature of the macronutrients. Estimation of the nutrient contents of foods. Nutrient interactions. Body composition. Use of food tables. Role of nutrients in maintenance of health and prevention of disease. Micronutrients deficiencies and non-communicable diseases and its treatment methods. Acid and Alkali foods, Prebiotics and probiotics. Dietary guidelines for healthy living.

5.1.2.3 Subjects Offered by the Department of Agricultural Economics

The advanced programme in Agricultural Economics is designed to allow students to acquaint themselves in key areas of Agricultural Economics, Resources and Environmental Economics, Extension and Business Management. The courses are designed to equip the students with knowledge and skills necessary to conceptualize and implement socio-economic development as well as business and management related strategies in agriculture. The students are exposed to a number of inter-disciplinary courses to impart skills on human behavior attributes such as leadership, teamwork and effective communication skills whilst covering broad dimensions in Social Science. Giving due recognition to the dynamics of the modern world, the graduate is armed with competencies in management, marketing and entrepreneurship too.

Serial Number	Course Notation	Courses	Credit Units
1.	EC 3201	Agricultural Finance	(2:30/00/70)
2.	EC 3202	Agricultural Price Analysis	(2:30/00/70)
3.	EC 3203	Environmental Economics	(2:30/00/70)
4.	EC 3204	Gender and Development	(2:30/00/70)
5.	EC 3205	Land Economics	(2:30/00/70)
6.	EC 3206	Development Economics	(2:30/00/70)
7.	EC 3207	Production Economics	(2:30/00/70)
8.	EC 3208	Natural Resource Economics	(2:30/00/70)
9.	EC 4101	Social Research Methodology	(2:30/00/70)
10.	EC 4102	Agricultural Marketing	(2:30/00/70)
11.	EC 4103	Basic Econometrics	(2:30/00/70)
12.	EC 4104	Environmental Valuation	(2:30/00/70)
13.	EC 4105	Information Systems for Agricultural Development	(2:30/00/70)
14.	EC 4106	International Trade	(2:30/00/70)
15.	EC 4107	Project Planning and Investment Analysis	(2:15/30/55)
16.	EC 4108	International Economics	(2:30/00/70)

EC 3201 Agricultural Finance (2:30/00/70)

Introduction to Agricultural Finance, A Look at Current Farm Financial Conditions, An Introduction to Competitive Strategy and the Structure of Agricultural Credit Markets, Financial Analysis, Planning and Control Farm Businesses, Capital

Structure, Liquidity and Risk Management, Agribusiness Finance, Capital Budgeting and Long-Term Decision Making, Risk Management.

EC 3202 Agricultural Price Analysis (2:30/00/70)

Consumer Demand Theory and Theory of the Firm, Product and Input Demand Curves, The Role of Prices in a Free Market Economy, Aggregate Demand and Supply Curves, Changes in Quantity Demanded (Supplied) vs Changes in Demand (Supply). Elasticities of Demand and Supply, Relations between elasticities, Marketing Margins and Farm-Retail Price Spreads, Relation Between Farm-Retail Price Elasticities, long run vs Short-run Elasticities. Understanding agricultural prices and markets, Empirical agricultural price analysis, International Agricultural Trade, Market structure and Price Determination Models. Empirical Models of Demand and Supply, Agribusiness Marketing Strategies, Managing Price through Futures Markets; Strategic Price Setting.

EC 3203 Environmental Economics (2:30/00/70)

Introduction to Resource and Environmental Economics: Historical background, resource scarcity, Market and social welfare-welfare economic principles, market failure, Externalities. Property rights, common property and public goods, Economics of Climate change, Principles of Environment Impact Assessment, Economics of Pollution, Pigouvian taxes, Coase theorem.

EC 3204 Gender and Development (2:30/00/70)

Introduction and Overview – Introduction to gender concepts, the importance of gender perspective in development initiatives, gender difference across the developing world. Approaches to gender and development – Welfare approach, Women in Development (WID) approach, Gender and development (GAD) approach, Empowerment approach. Power relation and gender inequalities in developing countries. Gender analysis.

EC 3205 Land Economics (2:30/00/70)

Principal of Land Utilization, Objectives of rational land use, Elements of land use planning, Political economy of the land. Soil surveys and land classification methods, Relationship between land use classification and economic land utilisation, and farm management techniques for optimising land use. Interrelationship and conflicts between optimum micro land utilization principals and macro land use objectives, Principals of conservation; forestry, land reclamation and Soil conservation as land policies, Land settlement policies; Economic and social evaluation of land settlement policies and multi-purpose project Land reform principles and policies, Land policies of Sri Lanka since the 1920s.

EC 3206 Development Economics (2:30/00/70)

Introduction to development: Economic development and Economic growth, Measurement of economic development, Development Gap, Characteristics of

Developing Countries, Obstacles to Economic Development. Population and Development; Population pyramid, Effects of population growth, Population growth and demographic transition, Social and economic implications of population growth with special reference to Sri Lanka. Technology and Development; Role of technology in development, Transfer of technology, Appropriate technology. Human Resources and Development; Importance of developing human resources, Brain Drain with special reference to Sri Lanka, Agriculture and Economic Development; Agriculture in developing countries, Role of agriculture in economic development. Theories of Economic Growth and Development; Growth stages theory, Dual economic model, Balanced and unbalanced theory, Theory of induced innovation, 'Big-Push' Theory. Agricultural Policies in Sri Lanka; History of agricultural policies in Sri Lanka, Agricultural policies operating in Sri Lanka.

EC 3207 Production Economics (2:30/00/70)

The production function and its usefulness in management, The factor-factor and product-product situations, Influence of time on production, Estimation and interpretation of production functions and possible applications of production function, Linear programming and sensitivity analysis.

EC 3208 Natural Resource Economics (2:30/00/70)

Introduction: Classification of resources- Renewable, non-renewable, Resource taxonomy, Storable Renewable resources: Forests, The economics of forest harvesting. Renewable common property resources: fisheries and other species, static efficient, sustainable yield, dynamic efficient sustainable yield, Appropriability and market solutions. Depletable, Non-recyclable energy resources: Natural- price control. Replenishable but depletable resources: Water, efficient allocation of scares water – surface water and groundwater.

EC 4101 Social Research Methodology (2:30/00/70)

The course is designed to introduce students to social science research and to develop student research and analytical skills. Students are introduced to the theory and logic of research, the ethics that guide the research process, and to the range of research methods generally employed in the social sciences. Attention will be paid to research design, data collection, elementary data analysis, and report writing. The course includes a discussion of specific methodological approaches. The emphasis is on providing practical knowledge of the research process and in preparing students to conduct their own basic research projects. The course will prepare students for advanced research methods courses in their chosen fields.

EC 4102 Agricultural Marketing (2:30/00/70)

Definition for marketing, Micro and Macro approaches to agricultural marketing, Economic integration, market environment, types and functions of marketing/markets, marketing costs and margin, Marketing and its role in development, Marketing mix, elements and their importance, consumerism and

legislation in marketing, local institutions in marketing, farmer organizations, marketing orders and arrangements, cooperative marketing, marketing of agricultural products and problems in Sri Lanka.

EC 4103 Basic Econometrics (2:30/00/70)

Introduction of quantitative methods and their role in economics. Simple regression analysis. Multiple regression analysis. Role of assumptions and consequences of violation of assumptions. Dummy variables use, computer analysis, interpretation.

EC 4104 Environmental Valuation (2:30/00/70)

Economic values: Types of values, Valuation methods: classification Revealed Preference methods: Hedonic property value, Hedonic wage method, Avoidance expenditure, Travel Cost Method. Stated preference methods; contingent valuation, Willingness to pay, choice experiments, contingent ranking.

EC 4105 Information Systems for Agricultural Development (2:30/00/70)

Introduction to Communication and Innovation Studies, Agricultural Information Systems: Introduction, conceptual aspects, the information System and the mix, Indigenous Technical Knowledge (ITK), Agricultural Information Systems in Industrial Countries, Agricultural Knowledge Information Systems (AKIS) for Rural Development, Agricultural Information Systems and Communication Networks, Agricultural Knowledge Support Systems, ICT in Agricultural Extension.

EC 4106 International Trade (2:30/00/70)

Theory of international trade, Barriers of trades, the effect of trades on income distribution and welfare, Trade and Sri Lankan economy, directions of trade, trading partners, the balance of payment equilibrium, capital movements, Exchange rates, Institutions of international trade, Terms of trade between developed and developing countries, Role of international agencies, country evaluation and selection, collaborative arrangements and control strategies.

EC 4107 Project Planning and Investment Analysis (2:15/30/55)

Defining the Project: Defining the project scope, the project cycle, Establishing project priorities, Creating the Work Breakdown Structure, Project Organization and information system, Developing a project plan, Project planning and implementation, Estimating project time, Costs and benefits: Guidelines for estimating time, Costs and Resources, Developing Budgets, Network Analysis for project implementation, Estimating project time, Costs and Benefits: guidelines for estimating tie, Costs and Resources, Developing Budgets, Network Analysis for project implementation, Scheduling of Resources-Human and Financial: PERT Chart, GANTT Chart, Impacts of Project-Community and Environment, Measures of project worth, Sensitivity Analysis-at different scenarios, Computers in project planning and management: Practical exercises on using the EXCEL and MS PROJECT Software will be conducted.

EC 4108 International Economics (2:30/00/70)

World Trade and the National Economy, International Trade Relations: Why Nations Trade, The Commodity Composition of Trade, Protection of Domestic Industries: The Tariff. International and Regional Trade Organizations, International Mobility of Productive Factors, Statement of International Transactions, Market-Determined Exchange Rates, The International Currency System, Offshore Banking; Melvin's International Money and Finance, The International Money Market Domestic Policies to Adjust the Balance of Payments, The Monetary Approach to the Balance of Payments, Historical Survey.

5.1.2.4 Subjects Offered by the Department of Agricultural Engineering

The advanced programme in the Department of Agricultural Engineering has been meticulously designed to provide the students with an in-depth knowledge on diverse Engineering applications in Agriculture and Environment to cater the existing demand and to meet the challenges in the field. The courses encompass a global view of the food production systems, the wise management of natural resources in the production, processing, storage and use of food fiber and other biological products. Upon completion of the advanced programme, the students will be able to analyze industrial problems based on agriculture, postharvest processing, eco-system protection, renewable energy development and precision applications related to engineering and technological aspects and find valuable solutions based on engineering principles.

Serial Number	Course Notation	Courses	Credit Units
1.	AE 3201	Climate Change and Water Resource Management	(2:15/30/55)
2.	AE 3202	Soil and Water Conservation Engineering	(2:15/30/55)
3.	AE 3203	Environmental Pollution and Control	(2:15/30/55)
4.	AE 3204	Green Technology for Agriculture	(2:15/30/55)
5.	AE 3205	Postharvest Engineering	(2:15/30/55)
6.	AE 3206	Testing and Evaluation of Farm Machinery	(2:15/30/55)
7.	AE 3207	Integrated River Basin Management	(2:30/00/70)
8.	AE 3208	Engineering Hydraulics	(2:30/00/70)
9.	AE 3209	Image processing & Spatial analysis	(2:15/30/55)
10.	AE 3210	Fundamentals of Surveying	(2:15/30/55)
11.	AE 3211	Structural Design of Farm Structures	(1:15/00/35)
12.	AE 3212	Automation and Process Control Systems for Agriculture	(2:15/30/55)
13.	AE 3213	Disaster Management & Mapping	(1:15/00/35)
14.	AE 3214	Agricultural Food Processing	(2:15/30/55)
15.	AE 3215	Internet of Things (IoT) in Agriculture	(2:15/30/55)
16.	AE 4101	Advanced Watershed Management	(2:15/30/55)
17.	AE 4102	Pressurized Irrigation System	(2:15/30/55)

18.	AE 4103	Water Quality for Agriculture	(2:15/30/55)
19.	AE 4104	Environmental Impact Assessment	(2:15/30/55)
20.	AE 4105	Waste Management	(2:15/30/55)
21.	AE 4106	Advanced Farm Mechanization	(2:15/30/55)
22.	AE 4107	Postharvest and Process Engineering	(2:15/30/55)
23.	AE 4108	Advanced Hydrology and Climatology	(2:15/30/55)
24.	AE 4109	Hydrogeology	(2:15/30/55)
25.	AE 4110	Drone Technology & Mapping	(2:15/30/55)
26.	AE 4111	Geospatial Technologies for Agriculture	(2:15/30/55)
27.	AE 4112	Sensor Technology for Precision Agriculture	(2:15/30/55)

AE 3201 Climate Change and Water Resource Management (2:15/30/55)

Climate and Weather, Climate change: evidences, temperature variation, rainfall, humidity and evaporation. Climate change impact on water resources, agriculture, environment, livestock production, climate change adaptation and mitigation, Floods and water logging causes, Flood control measures, Classification of floods, introduction to flood estimation and design of flood frequency. Socio-economic conditions and climate change. Farmer's awareness on climate change. Adaptation strategies. Importance of water resources management in Sri Lanka, major components and functions of water resources management. Water Resources of Sri Lanka, Water resources in Batticaloa, water use in agriculture, problems and extent of irrigated and rainfed land, potential of surface and ground water availabilities. Management and utilization of ground water. Water Users' Associations: need of water users' associations in Sri Lanka. problems and constraints in establishment of water users association.

AE 3202 Soil and Water Conservation Engineering (2:15/30/55)

Introduction: importance and scope of soil and water conservation. Soil erosion: types, water and wind erosion, mechanics of erosion. Factors affecting water and wind erosion. Precipitation: rainfall characteristics related to erosion. Watershed: definition, watershed characteristics. Factors affecting infiltration and runoff, importance of infiltration in soil and water conservation. Soil loss equation and its components, soil loss estimation, Erosion and Control Practices, Vegetated Waterways, Terracing. Conservation Structures, Farm Ponds, water harvesting concepts, site selection and design of farm ponds. Agronomic practices to control erosion: tillage, contour farming, strip cropping, cover crops. Field visit to soil and water conservation sites.

AE 3203 Environmental Pollution and Control (2:15/30/55)

Environmental pollution, Types of environmental pollution, Impacts of air, water and soil pollution on environment, health and agriculture, air pollution and control: Nature, sources, types of pollutants, atmospheric diffusion of pollutants and air pollution controlling strategies, water pollution and control: Nature, sources, types of pollutants and water pollution controlling strategies, soil pollution and control: Soil contamination by chemical pollutants (organic and inorganic): sources and fate,

remediation by plants, bioremediation by microorganisms and soil pollution controlling strategies, noise pollution and control: Nature, sources and noise pollution controlling strategies, thermal pollution and control: Nature, sources and thermal pollution controlling strategies.

AE 3204 Green Technology for Agriculture (2:15/30/55)

Introduction to green technology, application of green technology in agriculture, green technology and environmental concerns, technologies for environment-friendly agriculture, Energy basis (renewable energy): Solar energy, wind energy, bio mass energy, hydro power energy, geo-thermal energy, tidal/wave energy, etc. environmental basis: Pollution and agriculture - Impacts of pollution on agriculture, technologies to reduce/eliminate pollution, agricultural waste management: Properties of agricultural wastes, Effect of agricultural wastes on natural resources, methods of agricultural waste management (composting technology, biogas technology, etc.).

AE 3205 Postharvest Engineering (2:15/30/55)

Status of postharvest sector of grains in Sri Lanka, harvesting, threshing and post-harvest losses of grains, Grain process engineering, Grain storage principles and structure, Air properties and psychrometrics, Application of psychrometrics on agro processing, Postharvest engineering and processing of fruits and vegetables, Overview of engineering principles of preservation, Design of on farm cold stores - Calculation of field heat load, respiration load, conductive heat gain load through walls, ceilings ad floor, convective heat gain due to mixing of air, equipment heat load due to equipment, human energy load, Refrigeration fish , meat and poultry, Refrigeration load of cold storage rooms, Transportation of refrigerated food.

AE 3206 Testing and Evaluation of Farm Machinery (2:15/30/55)

Types of tests; test procedures, test equipment; usage and limitations, laboratory and field testing of selected farm equipment, tractor performance testing, evaluation and interpretation of results, review and interpretation of test reports.

AE 3207 Integrated River Basin Management (2:30/00/70)

Integrated Water Resources Management (IWRM) and its concepts, Water resource policy and institutional framework, Water sharing and conflicts, Sectoral demand and resource allocation. Water concepts such as water scarcity, virtual water, Assessment of water demand of different water use sectors, Supply and demand management, Water quality characteristics and management, Climate change and water resources management, Water and ecosystem, Wetland: definitions and classification of wetlands, wetland management. Dam construction and its impact on ecosystems, Application of models for water resource planning and management.

AE 3208 Engineering Hydraulics (2:30/00/70)

Properties of fluid: density, viscosity, surface tension, bulk modules of elasticity, compressibility of fluids, Laws of conservation of mass, momentum and energy, Fluid statics: pressure variation in a fluid, pressure measuring devices, gauges and manometers, buoyancy and stability of submerged and floating bodies, pressure on immersed surfaces and masonry dams, depth of centre of pressure on immersed surfaces. Fluid kinematics: types of flow, continuity equation, Bernoulli's equation and its application. Energy consideration in steady flow: general equations of steady flow, steady flow in pipes, heads, hydraulic and energy gradient lines, power consideration, losses of head. Flow measurements: orifice, weir and notches, venturimeter, Open channel flow, sediment transport.

AE 3209 Image Processing & Spatial Analysis (2:15/30/55)

Theory: Digital image interpretation: pixel, sampling and file formats, Image processing techniques: Image enhancement, Color composites and Classifications, Resampling of digital images, Accuracy assessment, Thermal infrared remote sensing, Data structure and database management systems, Concept of Spatial analysis, Spatial modelling: DEM, DTM and raster modeling, Spatial statistics and sampling in GIS, Advanced Geoprocessing & Spatial analysis.

Practical: Advanced GIS & RS analysis and applications in ArcGIS, Designing & editing Geodatabase**,** Advanced Geoprocessing & Spatial analysis, Mapping of land and crop information using GIS techniques**,** Field studies and mapping in spatial decision making**,** Software applications (ERDAS IMAGINE, ENVI, ArcGIS) for image processing, Applications of raster image tools**,** LST retrieval and mapping**,** Image processing techniques for Agriculture, Environment and Urban changes**,** Case studies and applications in agriculture and related disciplines.

AE 3210 Fundamentals of Surveying (2:15/30/55)

Theory: Introduction to Surveying and Historical development of survey in Sri Lanka**,** Principles of survey**,** Linear Measurement, angular measurement, Units and Survey Equipments, Surveying methods: Chain, Plane table, Levelling, Contour, Theodolite Traversing**,** Introduction to Global Positioning System (GPS)**,** Introduction to Aerial Photogrammetry.

Practical: Chain Surveying & Field Book Keeping**,** Plane Table Surveying**,** Traverse Surveying & Field Book Keeping**,** Leveling, Level Book Keeping and calculations**,** Concepts of Engineering Survey drawing (Longitudinal Section & Cross Section Plans)**,** GPS surveying (Hand Held GPS)**,** Introducing Manual Drawing and drawing software**,** Developing plans using different survey methods.

AE 3211 Structural Design of Farm Structures (1:15/00/35)

Properties of building materials**,** Elements of farm buildings**,** Calculations related to building materials**,** Functional forces in building structures**,** Calculation of functional

forces in farm buildings, Environmental conditions required for farm buildings, Housing for specific requirements: animal husbandry, crop and storage structures.

AE 3212 Automation and Process Control Systems for Agriculture (2:15/30/55)

Introduction to automated process control systems, Introduction to Sensors, Transducers and Actuators, Microprocessors and Microcontrollers, PIC and Arduino programming, Programmable Logic Controllers (PLC), Printed Circuit Boards (PCB), Circuit assembly, Interfacing transducers and actuators, Stepper motors and Servo motors.

AE 3213 Disaster Management & Mapping (1:15/00/35)

Introduction to Natural & Man-made Disasters: Characteristics, Causes and Effects, Natural Disaster and Climate Change Risk in Agriculture, Introduction to Disaster Preparedness and Disaster Management, Disaster Response and Post- Disaster Recovery, Technologies for Disaster Management, Geospatial applications in Disaster management, Risk Assessment and Vulnerability Mapping.

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.

AE 4101 Advanced Watershed Management (2:15/30/55)

Concepts and definitions of watershed management, current problems in watersheds. Importance of watershed management. Water shed: Definition, Small and large watersheds, Watershed characteristics, Deterioration of water shed, Water shed Delineation, Coding of water shed. Principles of water shed management, Objectives of water shed management, Factors affecting water shed management, Benefits of water shed management, Steps of water shed management, Water shed development methods, Watershed management practices, Sedimentation of resources, Controlling sedimentation of reservoirs, Watershed work plans, Integrated watershed management, Water harvesting, Conflict Management in water shed area. Agronomic, engineering practices for soil and water conservation in water shed area, natural resource management, Water Harvesting. Field study trips to watershed areas, small dams sites and other watershed project sites and writing reports.

AE 4102 Pressurized Irrigation System (2:15/30/55)

Introduction to pressurized irrigation system, types of pressurized irrigation system, micro irrigation, advantages and limitations, system components: control head, pipe distribution network. Layouts of the system, design requirements, estimation of water requirement. Drip irrigation: design procedure, selection of emitters, design of lateral, manifold, sub main, main and pump. Head loss through emitter, lateral. Drip design problem, fertigation, clogging of emitters. Care and maintenance of the system. Sprinkler irrigation: advantages and disadvantages, system components, layouts, types of sprinkler system, uniformity coefficient, design procedure, selection of nozzles, design problems, evaluation. Visit to a sprinkle and trickle irrigation project sites.

AE 4103 Water Quality for Agriculture (2:15/30/55)

General information on water quality, quality of irrigation water: problems of poor water quality, managing water quality, water quality criteria, suitability and classification of irrigation water, use of saline water for crop production, wastewater irrigation in crop production. Analysis of irrigation water. Irrigation water quality effects on soil environment. Measurement of infiltration rate of saline, sodic and waterlogged soils. Quality of drainage water, Agricultural Chemicals and Groundwater Contamination.

AE 4104 Environmental Impact Assessment (2:15/30/55)

Introduction, history of EIA in Sri Lanka, legal framework governing EIA in Sri Lanka, resources needed for an EIA, role of environmental agencies in the application of EIA process, Prescribed projects, project approving agencies, steps and process involved in IEE and EIA in Sri Lanka: preliminary information, screening, scoping, Terms of Reference (ToR), EIA study and report preparation, EIA report review,

decision making and implementing, monitoring, implementation issues and case studies.

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 4106 Advanced Farm Mechanization (2:15/30/55)

Present status of Farm Mechanization in Sri Lanka, Analysis of agricultural machine components and systems, Measuring field performance of agricultural machinery, hydraulic power transmission, selection of optimum power requirement, Adoption of controlled traffic farming systems.

AE 4107 Postharvest and Process Engineering (2:15/30/55)

Introduction to Agricultural Process Engineering, Engineering Properties of food materials, Flow of food materials: viscous flow, turbulent flow, multi-phase flow, working principles of food processing equipment for extrusion, mixing, distillation, extraction, concentration, solid-liquid separation etc., Application of heat and mass transfer as applied to food and processing, Alternative energy sources in food processing, Principles of solar dryers, Cold storage systems., Engineering fundamentals during cooling, cleaner production systems.

AE 4108 Advanced Hydrology and Climatology (2:15/30/55)

Theory: Hydrological process, hydrograph analysis, frequency analysis, groundwater hydrology, flood routing, water budget, hydrological data validation, well hydraulics, hydrological modeling, the science of climatology and its historical evolution, climatic parameters, Earth's energy budget, the solar radiation, it's production, transfer and distribution within the Earth- atmospheric system, the natural and anthropogenic greenhouse effects, climate change, The El Nino Southern Oscillation (ENSO), extreme events, disasters and resilience.

Practical: Derivation of unit hydrograph from flood hydrograph, derivation of unit hydrograph for different durations, estimation of probability of exceedance and return periods, flood routing, double mass curve analysis, application of hydrograph to estimate flow, estimation of effective rainfall, estimation of runoff: rational method,

Cook's method and Curve number method, measurement of stream flow and evaporation, simulation of runoff, retrieval of climatic parameters from automatic weather station, analysis and interpretation of climatic parameters.

AE 4109 Hydrogeology (2:15/30/55)

Theory: Introduction: basic concepts of groundwater and soil water, types of subsurface water, water potential, aquifer types. Formation of groundwater, aquifer functions, porosity, storage coefficient, hydraulic conductivity, transmissivity. Groundwater movement: Darcy's law and its application, observation wells, piezometers, flow nets, streamlines, equipotential lines, steady and non-steady flows. Well hydraulics: steady flow in confined and unconfined aquifers, steady flow in confined aquifer with uniform recharge, multiple well systems. Well construction: methods for constructing well, methods for drilling well, design of wells and gravel packing, methods of groundwater exploration. Pumping and recharge/infiltration in relation to the geological environment, Contaminant transport, Groundwater quality and pollution.

Practical: Measurement of hydraulic conductivity, groundwater recharge, groundwater quality assessment, groundwater flow calculations, Steady and unsteady groundwater flow, estimation of specific yield and specific retention, estimation of drawdown.

AE 4110 Drone Technology & Mapping (2:15/30/55)

Theory: Introduction to Drones, History of drone technology, Types and components of drones , Types, Resolution and Calibration of Drone Camera Sensors, An overview of aerial mapping, Remote sensing concepts for Drone mapping, Drone Mapping Processes: Preparing for a flight; Ground Control Points; Image overlaps; Precautionary measures; error and accuracy assessments.

Practical: Planning a mission and acquiring the data; Field Data Capture/Mapping, Drone Image Processing: Image processing using open source and commercial software, Creating Orthomosaics, DEMs, DSMs, digital contours and topographical maps, Drone maps interpretation for in various fields: Crop, soil, land, water, forest and disaster mappings, A fieldwork case study project.

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.

AE 4112 Sensor Technology for Precision Agriculture (2:15/30/55)

Types and applications of Sensors, Transducers and their applications, Operation of Microcontrollers and Microprocessors for data acquisition, Electronic Interfacing Devices, Importance of data acquisition for precision agriculture, Signal conversion techniques (A/D and D/A converters), Signal Processing, Signal Transmission, Instrumentation techniques for agriculture, Triggers in data acquisition.

5.1.2.5 Subjects Offered by the Department of Animal Science

Currently, animal industries are challenged by issues related to the quality and safety of animal products, disease resistance, animal comfort and wellbeing, management efficiency, global markets and environmental stewardship. In considering these issues, the Department of Animal Science designed the advanced courses on farm animal production and processing techniques, and aquaculture. Upon successful completion of these advanced programmes, the graduates will be able to address the issues and problems related to livestock, poultry, and aquaculture sectors and effectively contribute to the development of related industries.

Serial Number	Course Notation	Courses	Credit Units
1.	AS 3201	Grassland Science	(2:15/30/55)
2.	AS 3202	Animal Biotechnology	(2:15/30/55)
3.	AS 3203	Fish Biology	(2:15/30/55)
4.	AS 3204	Animal Waste Handling	(2:15/30/55)
5.	AS 3205	Animal Genetics and Breeding	(2:15/30/55)
6.	AS 3206	Climatology and Animal Production	(2:15/30/55)
7.	AS 3207	Animal Disease, Hygiene and Public Health	(2:15/30/55)
8.	AS 3208	Aquaculture Nutrition	(2:15/30/55)
9.	AS 3209	Micro Livestock Production	(2:15/30/55)
10.	AS 3210	Animal Behavior and Welfare	(2:15/30/55)
11.	AS 3211	Integrated Livestock Farming Systems	(2:15/30/55)
12.	AS 3212	Animal Biodiversity and Conservation	(2:15/30/55)
13.	AS 3213	English for Animal Science - Level I**	(1:00/30/20)
14.	AS 4101	Ruminant Nutrition	(2:15/30/55)
15.	AS 4102	Monogastric Nutrition	(2:15/30/55)
16.	AS 4103	Physiology of Cattle Reproduction and Lactation and Endocrinology	(2:15/30/55)
17.	AS 4104	Advanced Livestock Breeding	(2:15/30/55)

18.	AS 4105	Culture of Ornamental Fish and Aquatic Plants	(2:15/30/55)
19.	AS 4106	Meat and Dairy Technology	(2:15/30/55)
20.	AS 4107	Mineral Nutrition in Ruminants	(2:15/30/55)
21.	AS 4108	Shrimp Production Technology	(2:15/30/55)
22.	AS 4109	Egg and Fish processing Technology	(2:15/30/55)
23.	AS 4110	Chicken Embryology and Hatchery Technology	(2:15/30/55)
24.	AS 4111	English for Animal Science - Level II**	(1:00/30/20)
25.	AS 4112	Aquafeed Technology	(2:15/30/55)

AS 3201 Grassland Science (2:15/30/55)

Role of forages in productive agriculture, Introduction to grasses and legume species, Forage production and practices, Forage evaluation, Forage-Animal relationships, Importance of trees and shrubs in animal feeding, Nutritional limits to animal production for tropical pasture.

AS 3202 Animal Biotechnology (2:15/30/55)

Introduction. Historical retrospection, The cornerstone in modern Biotechnology. Gene technology, Basic techniques. Isolation/handling of genetic material. *In vivo* and *in vitro* DNA amplification, Gene cloning and expression, Genomic studies. Genome Mapping (genetic, physical and transcript maps), RNA molecules, Gene polymorphisms. Transgenesis, Basic Bioinformatics. *In vitro* culture of animal cells and tissues. Cell lines, Hybridomas, Production of monoclonal - polyclonal antibodies and their use in immune fluorescence, ELISA and RIA. Production and use of stem cells, Biotechnological applications in animal nutrition targeting higher utilisation of low nutritive value. Genetically modified feed, properties, legislation and analytical techniques of detection.

AS 3203 Fish Biology (2:15/30/55)

Basic structural features of fishes, Basic morphology of finfish and shellfish, Classification of finfish, Growth in finfish, Digestive system, Excretion and Osmoregulation, Reproductive system, Circulatory system, Respiratory system, Sensory system.

AS 3204 Animal Waste Handling (2:15/30/55)

Constraints of animal wastes and the Importance of waste management. Types of animal wastes; Waste storage; Composition of different wastes. Toxic gases from the wastes. Nutritional strategies to reduce the environmental impact; Animal waste management methods. Aerobic and anaerobic treatments, alkaline hydrolysis, land disposal of wastes, odor control strategies; biogas production, composting, by-product development. Fish waste management. Processing of slaughterhouse wastes.

AS 3205 Animal Genetics and Breeding (2:15/30/55)

Animal breeding and its importance. Genes and inheritance. Population genetics: gene and genotype frequencies. Hardy-Weinberg law. Predicting genetic changes: variance and standard deviation, heritability, repeatability. Genetic impact of reproductive technology; multiple trait selection: selection objective, tandem selection, independent culling level, selection index; calculating breeding value. Own records, parent records, progeny records. Introduction to molecular genetics. Genetic relationship and inbreeding: basic concept, genetic effect of inbreeding, inbreeding depression. Cross breeding: types of outbreeding, heterosis, systems of cross breeding. Artificial insemination: Sperm and oocyte manipulation. In vitro fertilization: Sperm, oocyte and embryo cryopreservation. Recipient hormonal manipulation. Embryo transfer. Transgenic animals. Cloning.

AS 3206 Climatology and Animal Production (2:15/30/55)

Definition of climate; Classification of climatic regions; Climatic factors. Assessment of climate; Study of climatic factors in relation to animal production. Introduction of breeds into different climatic regions. Agro meteorology and weather forecasting for Animal Husbandry activities. Microclimate modification in animal houses. Measurement of Temperature, Relative humidity, Air Velocity and Mean temperature of the surrounding, measurement of intensity of light in animal houses. Construction of climographs and hythergraphs. Estimation of cooling power of atmosphere. Heat tolerance test in bovines. Effect of climate on livestock production.

AS 3207 Animal Disease, Hygiene and Public Health (2:15/30/55)

Introduction to Bacteriology. Causation, pathogenesis, epidemiology, diagnosis, treatment and prevention of common bacterial and viral diseases in farm animal, poultry and fish. Causation, pathogenesis, epidemiology, diagnosis, treatment and prevention of common bacterial and viral diseases in Fish and fish. Pathogenesis and treatment and control of viral diseases and bacterial disease. Definitions of parasites, hosts, and life cycles. Pathogenesis of parasites and treatment of parasitic infections. Metabolic disorders of pregnancy and post-partum period. Prophylaxis and management of newborn animals. Microbiological control of animal foodstuff and water. Farm Hygiene (microclimate, disinfection). Veterinary and public health aspects of manure handling in large scale animal.

AS 3208 Aquaculture Nutrition (2:15/30/55)

Fish nutrition: Concept of feeding fish, history of fish nutrition research, evolution of fish feeds. Bioenergetics. Dietary requirements: Vitamins, proteins and amino acids, lipids, minerals, carbohydrates. Nutritional physiology: Feeding strategy, digestive system, digestion and absorption, digestibility, stomach content analysis. Non-nutrient diet components: Antinutrients and adventitious toxins, fiber, pigment, additives, accidental contaminants. Nutritional pathology: Deficiency and imbalance diseases. Feeding and fish husbandry: Feed utilization and fish growth, pellet

characteristics, feeding methods, feeding frequency, factors affecting feed management, prediction of growth and feed utilization, feeding early life stages.

AS 3209 Micro Livestock Production (2:15/30/55)

Livestock development and poverty. Livestock products and their role. Livestock and the environment. Introduction on micro livestock species. Advantages and limitations of micro livestock; micro livestock breeds: micro cattle, micro goats, micro sheep, micro pigs; poultry: chickens, ducks, geese, guinea fowl, Muscovy, pigeon, quail, turkey; domestic rabbits; rodents; management of micro livestock: housing, feeding, breeding, disease control.

AS 3210 Animal Behavior and Welfare (2:15/30/55)

Introduction to Animal behaviour; Importance of animal behaviour studies; Patterns of behaviour. Daily and seasonal cycles of behaviour; Physiological basis of behaviour; Environmental modification of behaviour; Developmental changes in behaviour. Genetic differences in behaviour; Behavioural disorders. Group formation: social relationship, process of socialisation locality and behaviour. Practical application: behavioural character for management practices; Favourable and unfavourable behaviour for domestication. Behavioural adaptations under domestication. Physical environment and behaviour; Common vices and their remedial measures. Analysis of behaviour in relation to location; Analysis of behaviour in relation to climatic environment. Analysis of social behavior.

AS 3211 Integrated Livestock Farming Systems (2:15/30/55)

Global livestock production systems. Description of different farming systems in Sri Lanka. Concept of complementarity and synergy; Principles of integrated farming; Scope and limitation of integrated farming systems. Sustainability of integrated livestock based farming systems and their economic importance; Crop-livestock integration. Livestock based integrated farming systems in different agro-ecological zones of Sri Lanka; Livestock-field crops integration. Livestock-plantation crops integration; Livestock-minor export crops integration; Criteria for evaluating crop-livestock systems. Livestock-fish integration; Livestock-rice-fish integration. Linkages and interaction among biogas units, cattle and buffalo units, goat and sheep units, poultry unit, piggery and rabbitry. New approach for changing farming systems in present energy crises.

AS 3212 Animal Biodiversity and Conservation (2:15/30/55)

Economic importance of biodiversity. Importance of biodiversity in food security. Current status of biodiversity in Sri Lanka. Classification of biodiversity; Importance of biodiversity in animal genetic improvement. Livestock genetic diversity: estimation of genetic diversity, indigenous animal biodiversity and its importance, loss of biodiversity in livestock, threats to livestock biodiversity. Conservation of animal biodiversity: convention on biological diversity, phylogenetic analysis of farm animal biodiversity. Biodiversity policies in Sri Lanka: Meta population ecology, species-area relationships, island biogeography theory and extinction debt, central

role they place in conservation theory. Key mechanisms of biodiversity loss: habitat loss and fragmentation, invasive species and climate change.

AS 3213 English for Animal Science - Level I (1:00/30/20)**

Listening: Listen to local speakers' & native speakers' recordings on field related lectures, discussions and presentations and audio recordings.

Speaking: Introduce and an object/ a person/ a theme; Present researched/reviewed findings at a formal/informal forum; Deliver a short speech on interested topics, Debating an issue (general/field related).

Writing: Interpret data from diagrams; Write report about a field visit/practical; Paraphrase a passage; Write scientific articles for publications; Summarize a passage.

Reading: Read to comprehend a passage and answer relevant questions; Read to summarize a passage; Review relevant reading materials for research purposes.

Vocabulary: Guess meaning of unknown words from the context; Vocabulary building from a root word by adding prefixes/suffixes.

Grammar: Sentence expressions; Active/passive

AS 4101 Ruminant Nutrition (2:15/30/55)

Evaluation of the feed resources for livestock in Sri Lanka. Methods of maximizing profits by reducing feed costs under local conditions. Recent advances in energy, protein and mineral nutrition. Formulation of rations for different functional groups of cattle. Nutrition for beef cattle, buffaloes, sheep and goats.

AS 4102 Monogastric Nutrition (2:15/30/55)

Feed industry of monogastric animals. Embryo nutrition; energy evaluation in monogastric animals. Protein requirements of monogastric animals. Protein evaluation methods. Digestibility concept for monogastric animals. Nutrient balance; animal calorimetry concepts. Feed additives for monogastric animals. Feed formulation for monogastric animals. Mineral nutrition. Rabbit nutrition.

AS 4103 Physiology of Cattle Reproduction and Lactation and Endocrinology (2:15/30/55)

Sexual development and differentiation. Developmental physiology: hormonal mechanisms during pregnancy and parturition; Physiology of male reproduction. Evaluation of semen quality and standards; Artificial Insemination: problems at farm level application in Sri Lanka, fertility problems in cattle. Synchronization of estrous. Reproductive disorder and their therapeutic management. Reproductive endocrine

system: endocrine glands, hypothalamic and pituitary hormones, hypothalamic control of the pituitary, gonadal, adrenal, placental, and uterine hormones, feedback regulation to control hormone concentrations, secretion, and effects (Male and Female) and cellular receptors for hormones. Recent advances in reproductive physiology: effect of environment on reproduction. Histology of parenchyma and cellular organization of mammary epithelial cell. Mamogenesis and lactogenesis; Milk synthesis and secretion. Biochemical and molecular control of mammary gland.

AS 4104 Advanced Livestock Breeding (2:15/30/55)

Design of breeding schemes. Breeding goal, breeding objectives, selection schemes, economic analysis; selection objectives and selection index. Application of cross breeding; four pathways of selection; genetic gain. Genomic breeding values. Breeding industry; introduction to linear models for animal breeding.

AS 4105 Culture of Ornamental Fish and Aquatic Plants (2:15/30/55)

Ornamental fish industry: Potential and development. Systems of rearing. Ornamental plants. Best management practices: Setting up of facilities, water quality management, nutrition and feeding management. Hatchery and grow-out technologies. Health management in ornamental fish farming: Common diseases and their control, bio-security and quarantine protocols. Conditioning and packaging of ornamental fish for transportation. Record keeping and marketing establishments.

AS 4106 Meat and Dairy Technology (2:15/30/55)

Properties of fresh meat, odour, colour, water holding capacity, texture profile and artificial tenderization; Stress on the animal: stress and the meat quality such as PSE and DFD in meat quality. Comminuted meat; preparation of various kinds of fresh and cooked meat. Products: canning, heat processing, sausages, ham, bacon, barbecuing; Principles of packaging; Product characteristics affecting packaging requirements. Packaging material and their characteristics. Principles and practices of production of high-quality milk; Advances in methods of chilling and preservation of milk. Thermal processing of milk, principles and methods, types of UHT-processing plants. Bacteriological, physical, chemical and nutritional effects of processing on milk. Processing of liquid milk, fermented milk products, cheese, ghee, butter, ice-cream, sweetened-condensed milk and dried milk powder. Preservation of milk and platform test; Packing, storage and marketing of milk products. Recent advances in utilization of dairy byproducts in product development, preservation of milk products.

AS 4107 Mineral Nutrition in Ruminants (2:15/30/55)

Importance of minerals in animal feeding. Mineral content of feed resources. Techniques in mineral analysis and estimation of requirements. Absorption, metabolism and excretion of essential minerals. Interaction of minerals in animal body. Mineral related deficiencies and toxicities.

AS 4108 Shrimp Production Technology (2:15/30/55)

Global shrimp production; Geographical locations of shrimps. Shrimp pond design and construction. Pond preparation: Facilities for shrimp farming. Water quality management. Feeds and feeding of shrimps. Disease control. Reproductive biology and artificial spawning. Shrimp hatchery and nursery management. Harvesting and marketing of shrimp. Environmental pollution and mitigation.

AS 4109 Egg and Fish processing Technology (2:15/30/55)

Egg anatomy and its biological importance. Physical, chemical, nutritional and functional characteristics of eggs, Egg quality identification and Microbiology of eggs. Processed egg products: whole egg, egg yolk, egg albumen, liquid egg product, frozen egg product, dried egg product, concentrated egg product, blended egg product, egg powder. Processing eggs: liquid egg processing, dried egg processing, packaging. Cooking and other applications. Egg substitutes. Hazard Analysis Critical Control Point (HACCP) system in the egg industry. Gross chemical composition of fish. Biochemical dynamics and the quality of fresh fish. Methods of identifying raw and processed fish, preservation of fish by curing, surimi and fish-mince products, Chilling and freezing of fish and Canning fish and fish products. HACCP and quality assurance of seafood.

AS 4110 Chicken Embryology and Hatchery Technology (2:15/30/55)

Introduction; Egg formation; Fertilization Pre-laying and post-laying development of egg. Events in embryonic development; Hatchery requirements. Egg selection and incubation methods; Management of incubators and hatching eggs: temperature, humidity, ventilation, turning of eggs, position of eggs and candling on the hatchability of eggs. Factors affecting hatchability; Factors influencing chick size. Malposition of the embryo. Critical periods of embryo development. Post-hatching operations: sexing, vaccination, debeaking, transportation; Hatchery waste disposal; Hatchery sanitation; Hatchery records and performance evaluation.

AS 4111 English for Animal Science - Level II (1: 00/30/20)**

Listening: Listen to audio recordings of International Standardized Tests; Listen to discussions on general and academic related topics to express opinions and instructions to create an object/find solution to problems.

Speaking: Familiarize items tested at the International Standardized Tests; Present points/ideas/findings to academic audience; Deliver lectures on selected/ specialized topics; Interview people for the purpose of collecting data.

Writing: Report based on critical analysis; Writing articles for journals/book chapters based on research/review; Writing based on the topics in the International Standardized Tests; Writing long essays on a given topic.

Reading: Practice reading activities on the International Standardized Tests; Read scientific items published in a book/ newspaper

AS 4112 Aquafeed Technology (2:15/30/55)

Global aquafeed market trends and forecasts. Strategy of aquafeed production. Feed ingredients: Identification, classification, handling, processing. Aquafeed formulation: Nutrient requirements, diet formulation, processing, evaluation, feed categories. Preparation of moist, semi-moist and dry feeds. Diet analysis and evaluation: Chemical analysis, physical properties, biological evaluation. Packaging and storage of aquafeeds. Pelletized and extruded feeds. Effect of extrusion on dietary nutrients. Formulation of special feeds. Quality control and marketing. Animal feed Act.

5.1.2.6 Subjects Offered by the Department of Crop Science

The advanced programme in Crop Science is designed to cover the diverse discipline of field crops, horticultural crops, floriculture, forestry, protected culture, organic agriculture, agronomical and physiological aspects of crops and necessary management skills associated with social and environmental issues. Agriculture will become more intensified in the future with more land being used for non-agricultural purposes. New feasible and highly potential techniques as well as new concepts have been introduced into crop production system. The advanced courses address the constraints and limitations in the present crop production technology and approaches to overcome these problems with advanced techniques that have been recently introduced. After successful completion of this course, the students will have knowledge and skills on advanced technology in order to ensure the sustainability of crop production.

Serial Number	Course Notation	Courses	Credit Units
1.	CS 3201	Crop Physiology	(2:30/00/70)
2.	CS 3202	Plant Biotechnology	(2:15/30/55)
3.	CS 3203	Sustainable Agriculture	(2:15/30/55)
4.	CS 3204	Weed Management	(1:10/10/30)
5.	CS 3205	Cropping Systems	(1:15/00/35)
6.	CS 3206	Protected Agriculture	(1:15/00/35)
7.	CS 3207	Orchard Management	(2:15/30/55)
8.	CS 3208	Rice Agronomy	(1:15/00/35)
9.	CS 3209	Climate Change and Crop Production	(1:15/00/35)
10.	CS 3210	Nanotechnology for Crop Production	(1:15/00/35)
11.	CS 3211	Drone for Crop Management	(1:15/00/35)
12.	CS 4101	Application of Statistical Software in Data Analysis	(2:00/60/40)
13.	CS 4102	Organic Farming	(2:15/30/55)
14.	CS 4103	Climate Smart Agriculture	(1:15/00/35)
15.	CS 4104	Plant Tissue Culture Technology	(2:15/30/55)

16.	CS 4105	Commercial Seed Production	(2:15/30/55)
17.	CS 4106	Commercial Nursery Management	(2:15/30/55)
18.	CS 4107	Commercial Floriculture	(2:15/30/55)
19.	CS 4108	Crop Modeling	(1:10/10/30)
20.	CS 4109	Dry Farming	(1:10/10/30)
21.	CS 4110	Urban Horticulture	(1:10/10/30)

CS 3201 Crop Physiology (2:30/00/70)

Define and distinguish crop physiology and plant physiology, Physiology of crops growing under optimum conditions: Physiology of biomass production and yield formation, Photosynthesis, Different photosynthetic pathways, Light response curve of photosynthesis, Respiration, Source sink relationship, Partitioning and translocation of assimilates, Crop developmental processes, Physiology of crops growing under non optimum conditions: Crop physiology under water stress/drought, Crop physiology under heat stress, Crop physiology under salinity stress, Physiology of crop stress tolerance, Crop physiology for yield improvement.

CS 3202 Plant Biotechnology (2:15/30/55)

Introduction to Plant Biotechnology, Basic tissue culture techniques, Enzyme technology, Microbial inoculation of plants, Protoplast fusion, Recombinant DNA technology, Restriction enzymes, Vectors for gene transfer, Gene cloning, Direct and indirect methods of gene transfer, Construction of genomic library, Transgenic plants, DNA finger printing, Application of Plant biotechnology in Agriculture, Study tour.

CS 3203 Sustainable Agriculture (2:15/30/55)

Introduction to Sustainable Agriculture, Adverse effects of present agricultural practices, Definition and objectives of Sustainable Agriculture, Characteristics of Sustainable Agriculture, Sustainable Vs. Conventional Agriculture, Sustainable Compost Application, Biofertilizers, Sustainable Pest Management, Sustainable weed management, Integrated Plant Nutrient System, Crop Livestock Integrated farming system, Conservation Agriculture, GIS for Sustainable Agriculture, Introduction to Organic Farming, Phytoremediation of organic pollutants, Biodiversity , conservation and agricultural sustainability.

CS 3204 Weed Management (1:10/10/30)

Weed ecology, adaptations, crop weed interactions, losses caused by weeds, competition for light, space, moisture and nutrients, Allelopathy effect on crop growth and yield, competitive ability of crops against weeds, critical period of crop weed competition, economic uses of weeds. Methods of weed control and their merits and demerits, Integrated weed management, herbicide and weedicide, classification of herbicides, formulation, time and method of application, absorption and translocation of herbicides, mechanism of action and selectivity, herbicide recommendation based on crops and cropping systems, interaction with moisture, fertilizers, insecticides and fungicides, Integrated weed management for different

crops. Recent trends in weed management, herbicide tolerance, bio-herbicides, control of noxious weeds, parasitic weeds and aquatic weeds. Economics of different weed control methodology.

CS 3205 Cropping Systems (1:15/00/35)

Introduction, Principles, Classification, Cropping and farming systems of Sri Lanka, Advantages and disadvantages of cropping systems, Factors affecting selection of components of multiple cropping, Plant interaction and competition, Selection and designing of cropping systems for different situations, Evaluation of productivity of different cropping systems.

CS 3206 Protected Agriculture (1:15/00/35)

Greenhouse structures and modifications, Environment control strategies, Hydroponics and micro irrigation applications, Management of high value crops, Crop protection and Sanitation in protected culture.

CS 3207 Orchard Management (2:15/30/55)

Scope and importance of pomology, Orchard planning, establishment and management, Use of plant hormones and growth regulators in fruit production Crop establishment and management aspects of tropical/temperate fruit crops.

CS 3208 Rice Agronomy (1:15/00/35)

Origin and History, Morphology, Growth, and Development of the Rice Plant, The Climatic Environment and its Effects on Rice Production, Systems of Rice Culture, Land Preparation for Rice Soils, Water Use and Water Management Practices for Rice, Mineral Nutrition and Fertilizer Management of Rice. Yield.

CS 3209 Climate Change and Crop Production (1:15/00/35)

Climate, climate change and climate variability, greenhouse effect, global warming. Direct effects of increasing atmospheric CO2 concentrations on photosynthesis, water relation, respiration, biomass accumulation and leaf area production. Implications of climate change for weed/crop competition.

CS 3210 Nanotechnology for Crop Production (1:15/00/35)

Introduction to nanotechnology, Types of nanomaterials used in crop production, Applications of nanotechnology in crop production, Nano-fertilizers, Nano-fungicides, Nano-pesticides, Nanotechnology in precision agriculture, Effects of nanomaterials on physiology, growth and yield of crops.

CS 3211 Drone for Crop Management (1:15/00/35)

Why Drones for Agriculture, Remote sensing with Drones, How to apply remote sensing with Drones, Design your Drone application, The Drone system, main

components of a Drone, Drone types, sensors and cameras for Drones, remote sensing with Drones, Advantages of a Drone, Attention points when using a Drone, International and national aviation regulations, Safety and operational organization, Steps needed to prepare your mission, Assessing a field situation, Mission planning software, Image processing software and vegetation indices.

CS 4101 Application of Statistical software in data analysis (2:00/60/40)

Using statistical software to analyze different types of data, analyzing different experimental designs and interpreting the results statistically.

CS 4102 Organic Farming (2:15/30/55)

Organic and alternative crop production, Organic and low input cropping systems, Development and management of organic farms, Nutrient management in organic and low input systems, Biodynamic cropping, Research trends in organic farming, Plant protection in alternative cropping, Organic farming in Sri Lanka, Future trends in organic farming, Standards, regulations and Policies, Organic agriculture: key indicators and leading countries, The global market for organic food & drink.

CS 4103 Climate Smart Agriculture (1:15/00/35)

Definition of climate smart agriculture, Introduction to climate change impacts in agriculture, Importance of climate smart agriculture, Management practices for climate smart agriculture, Tools available for climate smart agriculture, Opportunities and challenges for adaptation of climate smart agriculture.

CS 4104 Plant Tissue Culture Technology (2:15/30/55)

Tissue culture techniques and its application, Organogenesis-meristem culture, Embryo culture, Somatic embryogenesis, Cell culture and secondary metabolites, Protoplast culture, Protoplast isolation and fusion, Haploid induction, Somatic hybridization, *In vitro* fertilization, Artificial seed production, Mutagenesis in plant tissue culture, *In vitro* germplasm conservation, Present prospects in crops, Application of Tissue culture in Agriculture and Industry, Study tour.

CS 4105 Commercial Seed Production (2:15/30/55)

Seed production principles: Self and cross pollinated plants, Generation system of multiplication, quality control, genetic purity maintenance, isolation and controlled pollination: Planting design, influence of agro-climatic factors on seed production, season and time of sowing, selection of seed production area, planning and organising seed industry. Methods of seed production in self and cross pollinated crops: varieties and hybrids of paddy, blackgram, greengram, cowpea, tomato, brinjal, chillies, okra and gourds, seed production in vegetatively propagated crops: sugarcane, onion. Harvesting techniques, methods of harvest, drying principles, seed extraction and processing. Seed cleaning and drying, seed packaging storage and transport, Seed industry in Sri Lanka.

CS 4106 Commercial Nursery Management (2:15/30/55)

Introduction, Classification of commercial nurseries, Site selection, Nursery structures, Propagators, Mother plant selection and management, Selection and preparation of potting media, Containers used for potting, Management strategies in commercial nurseries, Production of planting materials, Nutrition management and plant protection in nurseries, Acclimatization and training, Certification.

CS 4107 Commercial Floriculture (2:15/30/55)

Importance, Establishment of commercial cut flower and foliage nursery, Propagation methods and structures, Characteristic of cut flowers required for commercial purpose, Commercial production of cut flowers, Ornamental foliage and potted plants, Harvesting, grading, post-harvest treatments and packing for export markets, Export regulations, Modern production techniques, Value addition and preservation, Crop improvement.

CS 4108 Crop Modeling (1:10/10/30)

Introduction to crop modeling, Evolution of crop models, Types of crop models, Components of a crop model, Decision Support System for Agrotechnology Transfer (DSSAT) crop model, Design of crop experiments in DSSAT, Growth and yield simulation of rice and maize in DSSAT, Model calibration and validation in DSSAT.

CS 4109 Dry Farming (1:10/10/30)

Drought: definition, types and effect on crop production, Factors affecting crop production in dry farming regions, climatology, rainfall types, distribution and reliability of rainfall, effect of temperature, humidity and wind on soil moisture and crop growth in dry farming regions, soil types and characters, soil moisture deficit, traditional cultivation practices, integrated dry land development technology and its components. Soil moisture conservation practices, rainfall use efficiency in cropping systems, sequential cropping, and climatological approach for crop planning. National and International Institutions, Agencies and schemes for development of dry farming regions.

CS 4110 Urban Horticulture (1:10/10/30)

Introduction, Urban demand and food security, Crop diversification and sustainability, Factors influencing urban horticulture, Agronomic techniques, New trends, Community gardens, Permaculture, Organoponics, Hydroponics, Aeroponics, Roof gardening, Container gardening, Vertical gardens.

5.2 Other Courses

5.2.1 Courses Offered During Core Programme

5.2.1.1 Enhancement Courses

CC 1101 Introduction to Computing I (2:15/30/55)

Theory: Overview of computer systems. Overview of computer architecture and organization, Hardware in practice. Overview of computer software.

Practical: Word processing, Presentation software.

CC 1102 English (Level I) (1:15/00/35)

Reading: Comprehension passages notice and instructions, transfer information from charts, graphs, and maps.

Writing: Sentence patterns and grammar structures, the importance of vocabulary, subject matter glossary, summarizing, skimming and scanning of texts, process writing, practical recording, writing reports, notes, memos, notices, advertisements, informal letters, *etc.* Description of a person, place, picture, and incident.

Listening: Discussions, debates, interviews, films, documentaries, Radio and TV news, understanding, taking notes, and feedback.

Speaking: Self-introduction, describing places, favorite items, past experiences, events, and incidents. Dialogue on a given situation, Computer aided language learning, and communication.

CC 1201 Introduction to Computing II (2:15/30/55)

Theory: Fundamentals of computer networks and Internet. Introduction to database design. Computer security and best practices. Impacts of computers and computing on individuals and on the society.

Practical: Graphics and Web Development, Spreadsheets, Databases.

CC 1202 English (Level II) (1:15/00/35)

Reading: Subject-related essays and summaries, newspapers, magazines, research articles, *etc.*

Writing and grammar: Formal and informal writing, answering questions, report writing, communication and feedback, short description, reading and reporting on editorials, technical writing, model reports, CV writing, and filling applications.

Listening and Watching: Recordings of a local and native speaker, TV and Radio news.

Speaking: Description of a person, place, past events, or pictures. Storytelling, presentation of a selected topic, Demonstration of a process, group discussions, telephone and interview skills, Role-play, facing interviews, presentation and short speeches, guided writing, and addressing at different forums.

CC 1203 Career Development - Module I (1:00/30/20)

Introduction to Career Development: Taking personal responsibility for self-development: self-driven and life-long nature of career development; using motivated behavior for future success, Current and emerging trends in the local and overseas job markets for graduates, Forces driving the new economy and ways to capitalize on available opportunities; Making the best of opportunities available to university students within and outside the campus for career development; Effective transition from school to the university: Attitudes needed for success in university and subsequent world of work, The art of living with others and developing effective relationships, Understanding industry expectations for fresh graduates; Self-evaluation of students' awareness, attitudes and attributes; Effective study skills and motivated goal-directed learning; Personal organization and life management: Time management, Managing stress and handling interpersonal conflicts, Achieving and balance between mind, body and spirit; Programming for future success: Personal SWOT analysis, Developing a personal vision, Goal setting.

CC 2101 Visual Application Development (2:15/30/55)

Theory: Introduction to software design. Fundamentals of visual programming. GUI design and event handling. IDEs, tools, and debugging environments. Introduction to object-oriented programming. Database access. Packaging software.

Practical: Introduction to Integrated Development Environment (IDE), Variables, data types, and operators, Control structures – If-else, switch-case, for, while debugging. GUI design and customization. Buttons, text boxes, windows, and forms. Event handling. More input controls – Radio buttons, check boxes, list boxes, drop down, data-time control, icons, menu. File handling. Error detection and handling. Object oriented design – Objects, classes, and methods. Drawing and image manipulation. Database access I. Database access II. Software and Graphical Interface Design (GUI) design practices. Interface design for touch devices. Group programming project – Design and develop a GUI-based program to address a given problem.

CC 2102 Career Development (Module II) (1:00/30/20)

Understanding organizations and how they function: Roles and functions of managers, Understanding management styles and getting along with your supervisor, Organizational culture/ climate; Understanding leadership and its role in modem organizations: Leading vs. managing, Important leadership theories and

key issues related to exercising leadership, Motivating people at work: Influencing and persuasive skills, Employability skills: understanding important transferable skills and their relevance to the world of work and personal development, Effective personality attributes for a leadership role, Creating a sustainable competitive advantage: Personal branding, Impression management; Understanding effective team work: Synergy, Resolving team conflict; The concept of emotional intelligence.

5.2.1.2 Auxiliary Courses

CC 1103 Introduction to Social Harmony (1:15/00/35)

Introduction to social harmony: What is social harmony. Importance, Nature and scope of social harmony. Basic theories of social harmony. Approaches to social harmony. Elements that create social harmony: Violence: Ragging. Substance abuse. Gender inequality. Local discrimination: Caste, lack of resources for students. Segregation. Ethnicity. Culture & Society. Religious conservation and fanaticism. Economic inequality. Social mobility. Historical background to the social disharmony. Pre &- colonization & non colonization. Exploitation of human & resources. Expansion of religion. Ethnic cleaning. Current thinking & issues. The role of world religions to promote social harmony: Hinduism, Buddhism, Christianity, Islam, Dialogue among world religions. Education on human values: Tolerance, compassion, sympathy, honesty, friendship, kindness, helping attitude.

CC 1204 Basic Sinhala (1:15/00/35)

Introducing Sinhala alphabets, constructing simple words using the alphabets, Introduction to nouns and their different varieties, simple sentence structure, basic in sentence patterns, simple reading and writing exercises, Sinhala grammar and usage (passive voice, case, etc.), practical language training, introduction to simple literature in Sinhala language, practical listening and comprehension, introduction to modern Sinhala literature.

CC 1205 Basic Tamil (1:15/00/35)

Introducing Tamil alphabets, constructing simple words in Tamil, Introduction to nouns and verbs, simple sentence making, basic in sentence patterns, reading and writing exercises, grammar and usage, practical listening and comprehension.

5.2.2 Courses Offered During Advanced Programme

5.2.2.1 Enhancement Courses

CC 3201 Career Development Module III (1:00/30/20)

Habits of effective people (Covey's seven habits of effective people); Effective interpersonal communication: Eric Bern's transactional analysis**,** The concept assertive behavior and the use of assertive techniques; Dealing with difficult people; Dealing with conflicts: Conflict resolution modes, Principled negotiation, Mediation skills; Effective decision-making; Making effective presentations: Persuasive

communication, Understanding the role of verbal and non-verbal communication, Overcoming speech apprehension; Projecting the right image: Role of dress code, Grooming for success, Effective mannerisms and etiquette; Preparation of CV and cover letter; Guidelines for facing job interviews.

CC 3203 English for Agriculture (1:15/00/35)

Understanding information in a textbook; Taking notes from a text; Using present simple in a sentence; Writing compound sentences using coordinators; Subject-Verb agreement; Listening for the main and supporting ideas in a lecture; Reading and understanding main and supporting ideas; Identifying active and passive voice sentences; Writing lab reports using passive voice; Using sequence markers in a paragraph; Reporting practical sessions using passive voice and sequence markers; Understanding cause and effect and writing paragraphs; Presenting arguments for and against; The writing process: planning, writing the first draft, revising, editing and proofreading and publishing; Discussion: comparison and contrast paragraphs; Summary writing: organizing notes into summaries; Using signposting language; Understanding references in a text; Writing a research paper: content of a research paper, using in-text citations, references, etc.

CC 3204 English for Agribusiness Management (1:15/00/35)

Understanding information in a textbook; Taking notes from a text; Using present simple; Understanding the purpose of a text; Recognizing important information in a text; Writing: linking language, sequencing and adding information; Comparison of adjectives; Writing sentences about similarity and differences; Listening to academic speech and taking down notes; Speaking: levels of management; Reading comprehension - information transfer; Speaking: project planning techniques; Understanding and creating a Gantt chart; Interpreting line graphs and bar charts; Using adjectives and adverbs to describe trends; Reading and speaking: productivity trends; Writing sentences about trends using adverbs, the present progressive, the present simple tenses and prepositional phrases; Giving and supporting opinions, agreeing and disagreeing; Cause and effect; Expressing possibility - could, may and might; Using prepositions; Using evidence in a discussion; Past simple and present perfect; Referring to evidence: reporting verbs.

CC 3205 English for Business Writing (1:15/00/35)

Writing a memorandum: format; An introduction to emails; Email structure; Conventions for salutations and complementary endings; Using subject headings and dates; Ways of opening and closing an email/letter; Asking for information; Beginning paragraphs; Formal informal phrases; Writing and replying to inquiries; Writing a successful CV; Writing an attractive cover letter; Presenting oneself in interviews; Making and confirming arrangements; Referring; Giving good news; Giving bad news; Expressing ability/inability; Making a mild complaint; Warning; Making a strong complaint; Verbally presenting a strong complaint.

CC 3206 English for Presentation and Meetings (1:15/00/35)

Presentations: planning to make a presentation; Preparing to present and presentation techniques; Structure of a presentation: the introduction, the body and the end; Using images and making an impression; Using visual aids: general principles; Talking about the content of visual aids; Describing change; The middle of the presentation: holding the audience's attention, the main body, listing information, linking ideas and sequencing; The end: summarizing and concluding, questions and discussion; Meetings: arranging a meeting, confirming a meeting by email and rescheduling a meeting; Saying hello and making introductions; Starting a meeting; Stating the objectives; Reporting progress; Explaining cause and effect; Interrupting and dealing with interruptions; Asking for comments and contributions; Expressing strong and tentative opinions; Agreeing and disagreeing; Responding to offers; Buying time; Taking a vote; Summarizing the results of a meeting; Ending a meeting and thanking participants; Confirming decisions and action points; Follow-up emails; Saying goodbye.

CC 4101 Industrial Training (6:00/00/600)

Getting training at any one of the industries related to agriculture, Preparation of comprehensive reports regarding the training.

Report shall include: Abstract, Acknowledgement, Profile of the company, Summary of Duties, Working experience, Conclusion, References, Appendix.

5.2.2.2 Auxiliary Courses

CC 3202 Scientific Writing (1:15/00/35)

Types of research, Proposal development, Writing: Introduction, Literature review, Materials and Methods, Research Methodology, Results and Discussion, Conclusions, Suggestions and Recommendation, Review report and Abstract, Presentation of analyzed data in Tables and Figures, Preparation of reference list, Scientific presentation, Writing Scientific manuscript and review paper.

6.0 Additional Facilities

6.1 The Library

In fulfilling the main objectives of developing the faculty through self-studies and self-impressments, the University and Faculty libraries play a major role. There is a diverse collection of information resources in the libraries, especially in terms of the breadth and depth of coverage. The collection is multi-disciplinary, composing a variety of subjects related to the Departments and a full range of services is provided, including loans, inter-library loans, references and advisory services. The collection books are arranged using Dewey Decimal Classification (DDC) system. Anglo-American Catalog using rules and regulations are used to catalogue the collection. In addition to the books, the library collects project reports of the students and staff, research papers, conference proceedings, audio-visual materials, past papers etc. The library consists of its books collection in three sections, namely References, Schedule reference and Lending. In addition, it has a periodical section which comprises journals, magazines, reports and newspapers. The automated features of the library allow users to remotely access to the library. At present, the library is actively involved in providing access to electronic databases and online resources to support teaching, learning and research activities. The library has developed a digital repository to provide global visibility to the research output of the university.

Library Opening Hours

Monday to Friday: 8.00 a.m. – 6.00 p.m.
Saturday and Sunday: 8.00 a.m. – 4.30 p.m.
(The library will be closed on Public Holidays and Poya days)

Lending Hours

Books from	Monday to Friday
Lending	8.00 a.m. to 4.00 p.m.
Scheduled Reference	1.30 p.m. to 4.00 p.m.

*Lending facility is available from Monday to Friday.

6.2 The Department of English Language Teaching (DELT)

The Department of English Language Teaching was set up for the specific purpose of imparting English language skills to the undergraduates who enter the University with varying levels of proficiency in English and also with a view of improving their knowledge of English to enable them to follow the courses and read the literature in English in their chosen disciplines.

The medium of instruction in the Faculty Agriculture at the Eastern University is English and the students are required to answer all examination papers in the

English Medium. The DELT is therefore endeavors to impart sufficient knowledge in English language in order that the students would be able to read, comprehend and collect facts from text books in English and other sources like electronic media, internet in their subjects of study.

The DELT also conducts an intensive course during which, effort is directed towards improving general proficiency in English and the aspects taught include grammar and different language skills such as reading, writing and speech. The latter part of the intensive course is geared towards the development of skills to comprehend and reproduce subject material related to their field of study. The ongoing course provides approximately 2-3 hours of English per week throughout the students' University career. Facilities such as listening cubicles equipped with tape recorders are available. Video films of scientific, cultural and historical interest and a limited number of feature films are screened at regular intervals to motivate the students to improve their vocabulary and skills of speech. A special selection of books on a variety of topics is made available and inducement is provided to instill the reading habit among students. It should also be noted that programmes are staged to showcase the English language talents of the undergraduates and they are also exposed to various English language skills at the Career Guidance programme in the Final year.

6.3 Centre for Information and Communication Technology (CICT)

The Centre for Information and Communication Technology (CICT) is offering Computer Literacy and Application courses and conducting practical classes to internal and external students of all Faculties of the University. CICT also conducts certificate and diploma courses during weekends and vacation periods. CICT provides computer laboratory facilities for courses conducted by all faculties in the main campus, and also provides students' access for computer usage. CICT also provides ICT related technical assistance to the University. CICT maintains University Information Server (Web Server), Learning Management System (LMS) Server, ZOOM Server and Management Information System Server and other related services.

6.4 Career Guidance Unit (CGU)

The Career Guidance Unit of the Eastern University, Sri Lanka was established in 2003 in order to provide training for undergraduates of the University to embark on an optimal career and develop necessary competencies and transferable skills including attitudes, motivation and skills necessary to become efficient members of the workforce.

CGU functions directly under the supervision of the Vice Chancellor and presently headed by a Director who is responsible for administrative activities of the Unit. The Academic Career Guidance Advisors have been appointed to implement Faculty programs.

The Career Guidance Counsellors was appointed to assist the Director in designing and implementation of career guidance programmes across the university in liaison with staff of the CGU and Academic Career Guidance Advisors of faculties.

Functions and responsibilities of the Unit:

- Assist the students to select their future careers to suit their abilities, wishes and expectations.
- Liaise with private and public sector organizations to organize capacity building sessions to develop the skills required for the present-day job market.
- Organizing career skill development workshops, seminars and personal career mentoring programs for enhancement of career development competencies of students.
- Conduct zero credit courses with a view to creating a greater sense of professional responsibility, social responsiveness and ethical behavior for students.
- Liaise with private and public sector organizations to find out existing job opportunities and bring them to the notice of graduates.
- Assist Faculties to conduct the orientation programs for new students to facilitate the transition of young students from school to university.
- Organize career fairs in order to provide an opportunity for final year students to meet the prospective employers.
- Assist the Faculties to arrange internship/ industrial training programs for students.
- Organize workshops for students on how to write a CV, how to face an interview and ethics/ etiquettes etc.

6.5 Students' Hostel

Hostel facilities are available for both male and female students at EUSL. All the hostels are located inside the University. Currently, hostel accommodation is being given to all students without considering the distance of their residence. To maintain and ensure student discipline in the hostels, sub-wardens and academic sub-wardens have been appointed, and a warden monitors them. Students have access to a cafeteria inside the hostel. In addition to the gymnasium, small volleyball and badminton court are also made available to the students. For recreational activities, lobbying with TV access is available for male and female hostels. Mobile vehicles have been provided to the hostels in case of urgent medical treatment, and 24-hour security has been provided. Further, adequate infrastructure facilities have been extended to both male and female hostels.

6.6 University Health Centre

Students who fall sick report to the Health Centre for treatment. In the Health Centre the sick are examined their names and their particulars are written in bed head tickets and the necessary treatment also written. The nurse issues the drugs. Dressing of wounds is done by the Health Services Attendant. The Labourer does the cleaning and other minor works of the Health Centre. The patients who need admission and specialized treatment are sent either to Chenkalady/Eravur Hospital or to General Hospital, Batticaloa in the University vehicle.

If the students in the University Hostels are unable to come to the Health Centre for treatment, the Doctor visits them and provides necessary treatment. The sanitation of the University premises and the Hostels is looked after by the doctor. The University canteen and the hostel canteens and the Kitchens are visited by the Doctor and the cleanliness and any other regularities and necessities are reported to the University Registrar. Also, on the Inter-Faculty and Inter-University sports days the Doctor is present.

6.7 Physical Education (Sports and Facilities)

The Physical Education Unit is responsible for the organization and administration of Physical Education and recreational programmes of the University. Sports activities are promoted by the Sports Advisory Board and Sports Council. The Department of Physical Education provides facilities for the following sports disciplines at the University for students and Sports enthusiasts.

Football, Cricket M/W, Basketball M/W, Badminton M/W, Table Tennis M/W, Netball, Hockey M/W, Elle M/W, Kabaddi M/W, Volleyball M/W, Chess M/W, Fitness Culture, Karate M/W, Rugger, Weight Lifting, Athletics *etc.*

Inter-Faculty tournaments, Inter-University tournaments in the above mentioned sports are conducted every year. The Mini-Olympics Competitions are held every three years. University Colours are awarded to sportsmen and sportswomen performing well at recognized tournaments and meets approved by the Sports Advisory board. A gymnasium is available for indoor games.

6.8 Financial Assistance

Mahapola and Bursary scholarships are awarded to students. In every admission year, students who satisfy the eligibility criteria are selected by University Grants Commission for the Mahapola scholarships. Likewise, the Bursary scholarship is awarded to students who satisfy the eligibility criteria, and the bursary scholarship form is issued to the students during student registration.

6.9 Banking Facilities

Branches of two State Banks operate at Eastern University, where students and staff engage in banking transactions as per their requirements. ATMs of Banks have also been installed at the University's main entrance to facilitate student and staff financial transactions.

6.10 Cafeteria Service (Canteen)

More than ten cafeterias operated at the Eastern University, Sri Lanka, to serve meals to students and staff. All canteens serve both vegetarian and non-vegetarian foods. A canteen committee is appointed to monitor the food quality.

6.11 Annual Research Session (ARS) / Research Symposium

Research Sessions and Symposiums, conducted by the faculty are the great opportunities to students to disseminate their findings to the society. The research sessions will enhance the scientific writing and presenting skills of students.

6.12 University Business Linkages (UBL) Cell

University Business Linkages Cell was initiated in Eastern University, Sri Lanka with the collaboration of GIZ Small and Medium Enterprises (SME) Development Programme with the approval of the University Grant Commission of Sri Lanka. The main role of UBL cell is to coordinate and act as the interface with private sector of Eastern Province. Business facilitation and support, analysis, strategy design, organization, documentation, planning and monitoring of UBL portfolio, were identified as the future responsibilities. The cell facilitates the students to commercialize his/her valuable inventions when it channels properly through his/her supervisors.

6.13 Center for Industry Community Linkage (CICL)

Center for Industry Community Linkage was established in February 2022. This is a unique featured institution where the university connects and bridge (between community) academic as well as undergraduate having their expertise to be disseminated among the concurrent society for its wellbeing for the last two to three decades. Issus of comprehensive day today life accumulated as problems and fortunately university has the capacity to facilitate for solutions. Therefore, this center CICL will work as a hub to connect solutions for problems. Where university merged within the community here the research influences the development and the expectation is to commercialize. This is where the industry comes I to support economics of the same community. Technical knowledge and skill will be interpreted via CICL for community’s industrialization. The functionality of CICL will be across the faculties, institutes and campus in a multidisciplinary approach.

6.14 International Affairs Division (IAD)

With the concept of strengthening the international relationships of EUSL, the International Affairs Division has embarked its journey on 26th April 2022 with the objectives of;

- To initiate and facilitate to enter MoUs and agreements with various Higher Education institutions worldwide.
- To promote and coordinate the exchange of international research scholars and students.
- To facilitate to introduction short- term courses and summer programmes for international scholars and students.
- To keep up the correspondence and monitor the international relations of the University.
- To promote and help in the collaboration of interdisciplinary research within the University and Universities in abroad.
- To lobby to secure international and local grants, consultations for research activities.
- To express interest to associate with foreign Universities as co-partners to apply for projects and project writing.
- To offer administrative support for research projects.
- To develop and maintain the databases for international and international activities of the University.
- To be the coordinating center for international research conferences, training programs, workshops, and seminars of the University.
- To offer administrative support for all the foreign-funded projects operating in the University.

6.15 Center for Multidisciplinary Research (CMR)

The Eastern University's Multidisciplinary Research Centre has been established in February 2022, which has demonstrated a critical mass of academic support in Science, Agriculture, Humanities, Business, Economics, and Medical, as well as has the explicit endorsement of the University's Research Priority.

The main goal of the center serves as the guidepost for the university to reach its full potential in research and scholarly activity which will enhance Sri Lanka's future economic, social, cultural well-being and industrial needs of the field in a timely manner. The EUSL research priorities and strategies of the individual departments aim by tackling cross-disciplinary challenges and creating a shared cross-departmental vision in key thematic areas.

The objectives of the CMR are to:

- Promote collaborative-interdisciplinary research and enhance research networking as well as its capacity at national and international levels.

- Enhance education, training and research development and strengthen relevant skills for various stakeholders, inclusive of postgraduates and undergraduates.
- Enrich and expand the resources for research, and relevant activities.
- Utilize effectively the existing resources and focusing research supports for the University community.
- Transfer and mobilize the outcome as well as knowledge gained through researches for the benefit of the University and society.
- Provide consultancy services to the government, private and non-government organizations promptly whenever and wherever is need.

6.16 Center for External Degree and Extension Courses (CEDEC)

The Eastern University has commenced offering External Degree Programmes (EDPs) in 1991. However, as per the instruction of the UGC, the new admission into External Degree programmes had been suspended with effect from 2011. In terms of UGC Circular No. 932 of 15.10.2010 the Centre started its functions in the name of "Center for External Degrees and Extension Courses" has been established. The Centre is headed by a Director and managed by a Management Committee. The faculties are linked to the CEDEC through Board of Study and all academic matters cover under the direct purview of respective Faculty Boards.

At present, the Faculty of Commerce and Management and Faculty of Health Care Sciences are conducting External Degree programmes namely Bachelor of Business Management (BBM) and Bachelor of Science honours in Nursing (BSc. Hons Nursing) respectively. The Faculty of Arts and Culture and Faculty of Communication and Business Studies are waiting for the approval of the UGC to commence the External Degree programme for the Bachelor of Arts (BA) and Bachelor of Science in Management (BSc Management-Trinco campus). The proposal submitted by the Faculty of Agriculture for the programme of Diploma in Agriculture had been approved by Council at its 316th meeting and the programme (2021/2022) had been commenced with 165 Numbers of students on 27.07.2022. The duration of the programme is one year.

6.17 Center for Social Cohesion and Reconciliation

The University Grants commission aimed at promoting inter-ethnic cohesion and bridging the gap between among the diverse ethnic communities in Sri Lankan universities submitted a proposal to the presidential secretariat along with novel strategies. The presidential secretariat well realized the important of the social cohesion for the sustainability of national integration, multinational and cultural understanding pleased to grant permission to set up a center under the name of "Social Cohesion and reconciliation in state Universities". Hence, as an approved programme the Eastern University, Sri Lanka which comprises of all three such as, Tamils, Sinhalese, Muslims had found an ideal platform to further move forward to ensure the social cohesion and inter community integration by means of various social harmony related activities.

Objectives of the Center are;

- To promote and facilitate mutual understanding among diverse communities.
- To enunciate the importance of social cohesion to witness comprehensive developments in the society.
- To create a path towards the extensive contribution by the university community to ensure sustainable peace and social harmony.
- To motivate both students and academics to engage multi-disciplinary perspective research and explore the importance of “unity in Diversity”.
- To Understand the role of reconciliation process in bridging the gap among the diverse communities.
- To make an awareness among the young generation the optimum usage of the digital platform for the empowerment of social cohesion and Reconciliation process.
- Provide education and training in research and related skills, especially for postgraduate and undergraduate students, enhancing academic programs.
- To introduce short term, long term academic programmes in the field of peace and conflict related studies.

6.18 Gender Equity and Equality Cell, Faculty of Agriculture

EUSL is committed to the promotion of Gender Equity and Equality (GEE) and women’s empowerment where all students, academic, administrative and support staff, female and male, enjoy equal opportunities, human rights, and free from all forms of discrimination and harassment. Thus, EUSL policy on GEE has been designed to promote equality between women and men to eliminate unlawful discrimination and harassment; and to provide an inclusive working, learning and social environment in which the rights and dignity of all its staff and students are respected to assist them in reaching their full potential.

In line with this, GEE cell of faculty of Agriculture was established in 2016 that operates with the University GEE cell to ensure its capacity to facilitate and monitor the implementation of the GEE Policy. GEE Cell of faculty of Agriculture organizes regular meetings once in two months, reporting directly to the Faculty Board. All individuals at faculty of agriculture have a responsibility to adhere to the GEE policy and apply it in their day-to-day activities and in all dealings with the faculty. Faculty of Agriculture GEE cell functions with the mandate of zero tolerance towards SGBV and ensures equal opportunities for both genders among the staff and students through the following activities:

- Assisting staff and students to attend awareness workshops on GEE and SGBV in collaboration with university GEE cell.
- Identifying ways and means of preventing cases of SGBV (Sexual and Gender Based Violence) at faculty of Agriculture.

- Creating awareness on the reporting procedures on GEE and SGBV issues of staff and students.
- Promoting harmonious relationships between different categories of staff and students at faculty of Agriculture.
- Providing recommendations to the Dean and the Faculty Board on GEE related institutional concerns.

Composition

Dean of the Faculty (Chairperson)
Two academic representatives (one male and one female)
Two non-academic representatives (one male and one female)
Two student representatives (one male and one female)

6.19 Committees of the Faculty

There are seven committees at the faculty to regulate and expedite the activities. The Faculty Board has appointed the committee members. The objectives of the committees are listed below.

6.19.1. Faculty Quality Assurance Cell

The composition of the FQAC consists of the Dean of the Faculty (in the chair), all Heads of Departments, all professors, Coordinator/FQAC, Chairperson/Faculty Research Committee, Chairperson/Faculty Curriculum and Development Committee, Coordinator/Common Courses, Coordinator/Higher Degree Programme, Coordinator/Career Guidance Unit, Director/Centre for Quality Assurance, Director/Career Guidance Unit, Director/Centre for Information and Communication Technology, Director/Physical Education, Head/Department of English Language Teaching, Senior Assistant Librarian, Senior Student Counsellor, Medical Officer, and Senior Assistant Registrar/Student Affairs.

The FQAC meets every month to discuss and facilitate Faculty Quality Assurance related activities like; the FQAC action plan, student feedback, peer evaluation, examination moderation, second examiner's report, and other relevant matters. The decisions taken at the monthly FQAC meetings are submitted to subsequent Faculty Board meetings for recommendations and approval. The recommended and approved decisions are then submitted to the Centre for Quality Assurance Cell (CQA) for its observation.

6.19.2. Faculty Curriculum Development Committee

The composition of the committee consists Dean of the Faculty, all professors of the Faculty, Heads of the Departments and one representative from each department. The chairman and the department representatives have been appointed by the Faculty Board. The committee is responsible for all curricular-related activities. The committee will meet once in two months to take decision on

curricular activities. The committee is responsible for regular revision of the curriculum to produce quality graduates according to the needs of nation.

6.19.3. Faculty Timetable Committee

The Faculty Timetable committee acts as a sub-committee for the Faculty Board of Agriculture. The Faculty Board of Agriculture nominates the committee members from each department of studies. One of the senior members of the committee shall be served as the Chairperson. The committee meets whenever necessary to schedule the academic session and examination timetables.

6.19.4. Faculty Development Committee

The prime objective of the sub-committee is to monitor the development of the faculty. The committee will look after the infrastructural facilities of the faculty.

6.19.5. Faculty Farm Development Committee

The committee appointed by the faculty consists the representatives of each department to supervise the development of the farm.

6.19.6. Faculty Research Committee

The Faculty Board appoints the committee comprised of four members. The committee will monitor the research of the staff of the faculty.

6.19.7. Faculty Students' Union

The faculty has a Faculty Students' Union. The Office bearers for this union are elected unanimously or secret ballot by all students of the faculty. The Faculty Students' Union office consists of the following members.

President
Vice President
Secretary
Editor
Junior Treasurer and Committee members

The period of the members elected for the student union is one academic year. The duties and functions of the Faculty Students Union are as follows;

- to promote the corporate life and welfare of the student community of the faculty
- to take steps to encourage and further the academic interests of its students
- to safeguard and protect the good name of the Faculty and Institution
- to foster cultural and sports activities among the students of the faculty

- to make recommendation to the University Students' Union on matters pertaining to the disbursement of the funds and general welfare of the students' community of the faculty
- to ensure that all decisions of the Faculty Students' Union pertaining to the academic and welfare activities of the faculty are taken by a majority vote of its members

7.0 Examination Rules, Offences, Punishments and Legal Procedures

Given below are the Procedures for conduct of Examination recommended by the 336th meeting of the Senate and approved by the 325th meeting of the Council of the Eastern University, Sri Lanka.

7.1 Examination Rules

1. Candidates shall be in attendance outside the examination hall at least 15 minutes before the commencement of each paper, but shall not enter the halls until they are requested to do so by the supervisor.
2. On admission to the hall, a candidate shall occupy the seat allotted to him/her and shall not change it except on the specific instructions of the supervisor.
3. No candidate shall be admitted to the examination hall for any reason whatsoever after the expiry of half an hour from the commencement of the examination. Nor shall a candidate be allowed to leave the hall until half an hour has lapsed from the commencement of the examination or during the last 15 minutes of the paper.
4. Candidates shall have their Student Record Book, Student Identity Card and Admission Card with them in the examination hall on every occasion they attend for a paper/ an exam. The candidature is liable to be cancelled if a student does not produce the Student Record Book. If a candidate fails to bring his/her record book on any occasion, he/she shall sign a declaration in respect of the paper for which he/she had not produced the record book in the form provided for it, and produce the record book on the next occasion when he/she appears for the examination. The presentation of the Record Book thus, should be documented on the declaration form. The declaration forms shall be checked by the DR/SAR/AR of the faculty before the release of results.
5. If it is the last paper or the only paper, he/she is sitting, they shall produce the record book to the DR/SAR/AR of the faculty on the following day, and get the documentation on the declaration form. If a candidate loses his/her record book in the course of the examination; he/she may present his/her Student Identity Card and shall obtain a duplicate record book from the DR/SAR/AR of the faculty, for producing at the examination hall.
6. No candidate shall have any notes, signs, formulae, mobile phones, smart watches, other communication devices or any other unauthorized documents on his person, in his clothes, on the admission card, time table or record book. Books, notes, parcels, hand bags, mobile phones, other information and communication devices etc. which a candidate has brought with him/her should be kept at a place indicated by the Supervisor/ Invigilator.
7. A candidate may be required by the supervisor to declare any item in his possession or person.
8. No candidate shall copy or attempt to copy from any book or paper or notes or similar material or from the scripts of another candidate. Nor shall any candidate either help another candidate or obtain help from another candidate or any other person. Nor shall any candidate conduct himself so negligently that an opportunity is given to any other candidate to read anything written by him/her or to watch any practical examination performed

by him. Nor shall any candidate use any other unfair means or obtain or render improper assistance at the examination.

9. No candidate shall submit a practical or field book or dissertation or project study or answer script, which has been done wholly or partly by anyone other than the candidate himself.
10. Candidate shall bring their own pens, ink, mathematical instruments, erasers, pencils, or any other approved equipment or stationary, which they have been instructed to bring.
11. Examination stationery (i.e., writing paper, graph paper, drawing paper, ledger paper, précis paper etc.,) shall be supplied as and when necessary. No sheet of paper or answer book supplied to a candidate may be torn crumpled, folded or otherwise mutilated. No paper other than those supplied to him/her by the supervisor/ invigilator shall be used by candidates. Log tables or any other material provided shall be used with care and left behind on the desk. All the material supplied, whether used or unused, shall be left behind on the desk and not removed from the examination halls by the candidate.
12. Every candidate shall enter his/her index number on the answer book and on every continuation paper. He/she shall also enter all necessary particulars as indicted in the cover of the answer book. A candidate who inserts on his script and index number other than his own is liable to be considered as having attempted to cheat. A script that bears no index number or an index number, which cannot be identified, is liable to be rejected. No candidate shall write his name or any other identifying mark on the answer script.
13. All calculations and rough work shall be done only on paper supplied for the examination and shall be cancelled and attached to the answer script. Such work should not be done on admission cards, timetables, question papers, record books or on any other paper. Any candidate who disregards these instructions runs the risk of being considered as having written notes or outline of answers with the intention of copying.
14. Any answer or part of an answer, which is not to be considered for the purpose of assessment, shall be neatly crossed out. If the same question has been attempted in more than one place the answer or answers that are not to be counted shall be neatly crossed out.
15. Candidates are under the authority of the supervisor and shall assist him/her by carrying out his instructions and those of his invigilators, during the examination and immediately before and after it.
16. Every candidate shall conduct himself in the examination hall and its precincts so as not to cause disturbance or inconvenience to the supervisor or his staff or to other candidates. In entering and leaving the hall, he/she shall conduct himself as quietly as possible. A candidate is liable to be excluded from the examination hall for disorderly conduct.
17. Candidates shall stop work promptly when ordered by the supervisor/ invigilator to do so.
18. Absolute silence shall be maintained in the examination hall and its precincts. A candidate is not permitted for any reason whatsoever to communicate or to have any dealings with any person other than the

supervisor/ invigilator.

19. During the course of answering a paper, no candidate shall be permitted to leave the examination hall temporarily. In case of an emergency, the supervisor/ invigilator shall grant him/her permission to do so but the candidate will be under his surveillance.
20. No person shall impersonate a candidate at the examination, nor shall any candidate allow himself to be so impersonated by another person.
21. Serious note will be taken of any dishonest assistance given to a candidate, by any person.
22. If circumstances arise which in the opinion of the supervisor render the cancellation or postponement of the examination necessary, he/she shall stop the examination, collect the scripts already written and then report the matter as soon as possible to the Vice chancellor/ Registrar.
23. The supervisor/ invigilator is empowered to require any candidate to make a statement in writing on any matter, which may have arisen during the course of the examination, and such statement shall be signed by the candidate. No candidate shall refuse to make such a statement or to sign it.
24. No candidate shall contact any person other than the Vice Chancellor, Dean, Head of the Department or the Registrar regarding any matter concerning the examination.
25. Every candidate shall hand over the answer script personally to the supervisor/ invigilator or remain in his seat until it is collected. On no account shall a candidate hand over his answer script to the attendant, a minor employee or another candidate.
26. Every candidate who registers for an examination shall be deemed to have sat the examination unless he/she withdraws from the examination within the specified period or submits a medical certificate. The illness should be informed to the Dean of the Faculty within 7 days from the date of examination and the hardcopy of a Medical certificate should reach to the Dean, Faculty of Agriculture within 14 days to consider he/she as the proper candidate for the next attempt of examination**.** The medical certificate shall be from the university medical officer. If this is not possible the medical certificate should be obtained from a Government Medical Practitioner, and submitted to the university medical officer for the certification.
27. When a candidate is unable to present himself for any part/ section of an examination, he/she shall notify or cause to be notified this fact to the Assistant Registrar / Senior Assistant Registrar / Deputy Registrar of the faculty immediately and the evidence for the cause as Medical Certificate or any others should be reached as specified in Rule 25 to consider as proper candidate for the next attempt of examination.
28. A student who withdraws or absents himself from the examination and submitted the Medical Certificate within the stipulated timeframe shall be eligible for classes if he/she completes the requirements needed to award the class.
29. No student shall sit an examination, if he/she has exhausted the number of attempts, including the proper and three repeats, and a mercy chance with the approval of faculty Board and the Senate, that he/she is allowed to sit that particular examination, unless he/she has been granted special

permission to do so by the Senate.

7.2 Examination Offences and Punishments

The Examination Rules mentioned below refer to Examination Rules and Regulation Chapter XI of the Manual of Procedure on Conducting Examination, Eastern University, Sri Lanka.

1. Any candidate who violates Examination Rule 5 shall be deemed guilty of the offence of possession of unauthorized documents and shall be liable to cancellation of his candidature from the examination and to any further punishment that the Senate may decide upon.

2. Any candidate who violates Examination Rule 7 shall be deemed guilty of the offence of copying and shall therefore be liable to cancellation of his candidature from the examination and to be prohibited from sitting any examination of the university for a period of time and to any other punishment that the Senate may decide

3. Any candidate who violates Examination Rule 8 shall be deemed guilty of the offence of having cheated at the examination and shall be liable to the cancellation of his candidature from the examination and to be prohibited from sitting any examination of the university for a period of not less than three years and to any further punishment that the Senate may decide.

4. Any candidate who is detected removing examination stationary and other material provided for the examination (Rule 10) shall be deemed guilty of an examination offence and shall be liable for punishment including cancellation and/ or prohibition from sitting any examination of the university for such period as may be specified by the Senate.

5. Any candidate who violates any one or more of the Examination rules 6, 14, 15, 16, 17 or 18 shall be deemed guilty of the offence of disorderly conduct and shall be liable to punishment including cancellation/ or prohibition from any examination of the university for such period as may be specified by the Senate.

6. Any candidate who violates Examination Rule 19 shall be guilty of the offence of impersonation and shall be liable to cancellation of candidature from the examination and to be prohibited from sitting any examination of the university for a period of not less than 5 years and to any further punishment that the Senate may decide. He/she may also be liable to any punishment under the penal code/ criminal law.

7. Any candidate who violates Examination Rule 20 shall be guilty of an examination offence and shall be liable to cancellation of candidature from the examination and to any further punishment that the Senate may decide upon.

8. Any candidate found aiding and abetting in the commission of any of the above examination offences shall be deemed to have committed that offence and shall be liable to the same punishments.

7.3 Legal Procedures for Violation of Examination Rules

There shall be an Examination Disciplinary Committee of not less than 3 members appointed annually, at the beginning of each Academic Year, by the Senate to enquire into and make recommendations (including punishments) into examination offences referred to it. Members should be from different faculties, to ensure that at least two members are from another Faculty when an inquiry is under process.

Procedure for reporting of Examination Offences and Punishment

1. In all cases of violation of examination rules (Chapter XI) detected, the Supervisor shall take actions as outlined in this section and forward his report to the DR/SAR/AR of the faculty The Supervisor's report should be countersigned by one of the invigilators.

2. In cases of disorderly conduct, the supervisor shall in the first instance warn the candidate to be of good behavior. Disorderly conduct shall be considered grave, only if such conduct in the opinion of the supervisor is considered as causing a disturbance in the conduct of the Examination. Where the candidate persists in unruly or disorderly conduct the supervisor may exclude the candidate from the examination hall and issue him/her a letter with copies to the relevant Dean and DR/SAR Academic Affairs, cancelling his/her candidature from the examination. Where a candidate's offence is only disobedience the supervisor shall warm the candidate and forward a report to Dean and DR/SAR Academic Affairs.

3. In all other cases of examination offences detected, the Supervisor shall on the detection of the offence take possession of unauthorized documents if any and obtain a statement from the candidate and write his report on the matter to the Dean of the faculty. Materials taken into custody shall be authenticated by placing the signature of the candidate and the Supervisor/invigilator and the date time and place of detection.

4. The Dean after a preliminary inquiry shall place all reports of examination offences submitted by the Supervisors to the Exam Disciplinary Committee for further action.

5. Any examiner, Head of Department or any other official of the University who detects an examination offence, shall report the matter in writing to the Dean, who shall call for a preliminary inquiry and place the complaint to the Exam Disciplinary Committee for further action.

Final Decision on Examination Offences

The punishments recommended by the Examination Disciplinary Committee shall be submitted to the relevant Faculty Board for a decision and be referred to the Senate for ratification.

7.4 Appeals Board

1. There shall be an Appeals Board, consisting of three members, appointed by the Vice-Chancellor to consider the decisions made under Section 14.5.

2. Any student wishing to appeal against the punishment imposed on them should write to the Vice-chancellor in this regard within two weeks from the date of communication to them.

The Vice-chancellor shall consider the appeal and may decide to refer to the Appeals Board. Appeals Board shall either affirm or review the imposed punishment and make recommendation to the Vice- Chancellor.

8.0 Memorial Awards

a. ‘Kannappar Namasivayam Memorial Award’ is awarded to the student based on the best overall performance in the Bachelor of Science Honours in Agriculture degree programme.

b. ‘Somasundaram First Class Award’ is awarded to the student who obtains First Class in all four academic years in the Bachelor of Science Honours in Agriculture degree programme.

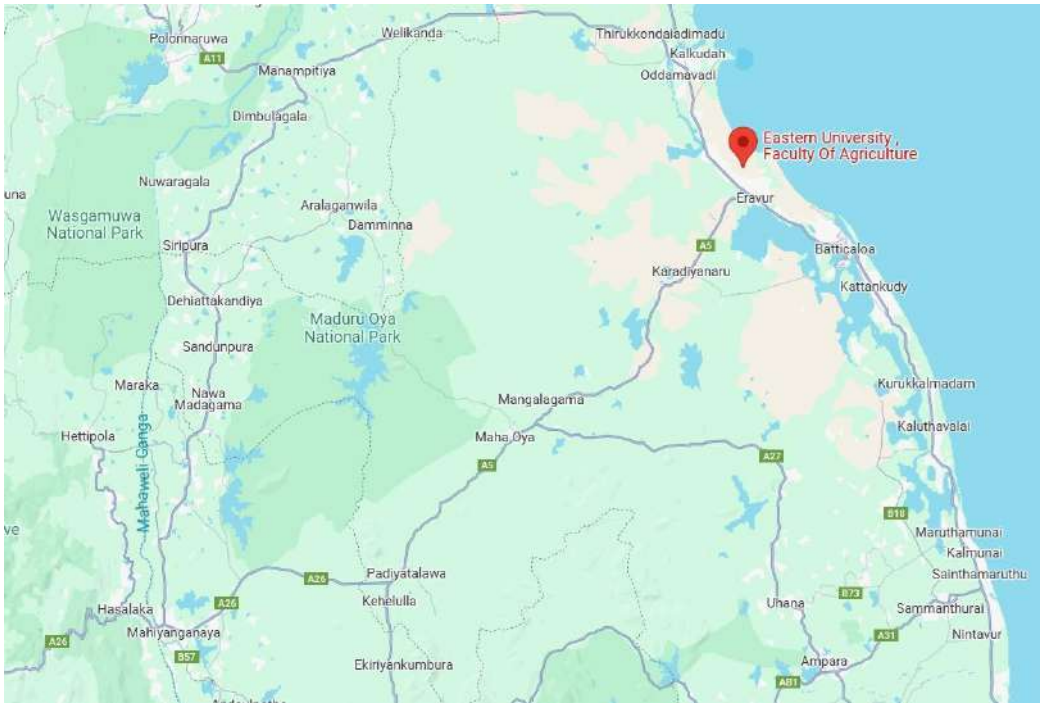
c. ‘Sornammah Rasamani Namasivayam Memorial Award’ is awarded to the student who conducts the best research project at the 4200 series of the Bachelor of Science Honours in Agriculture degree programme.

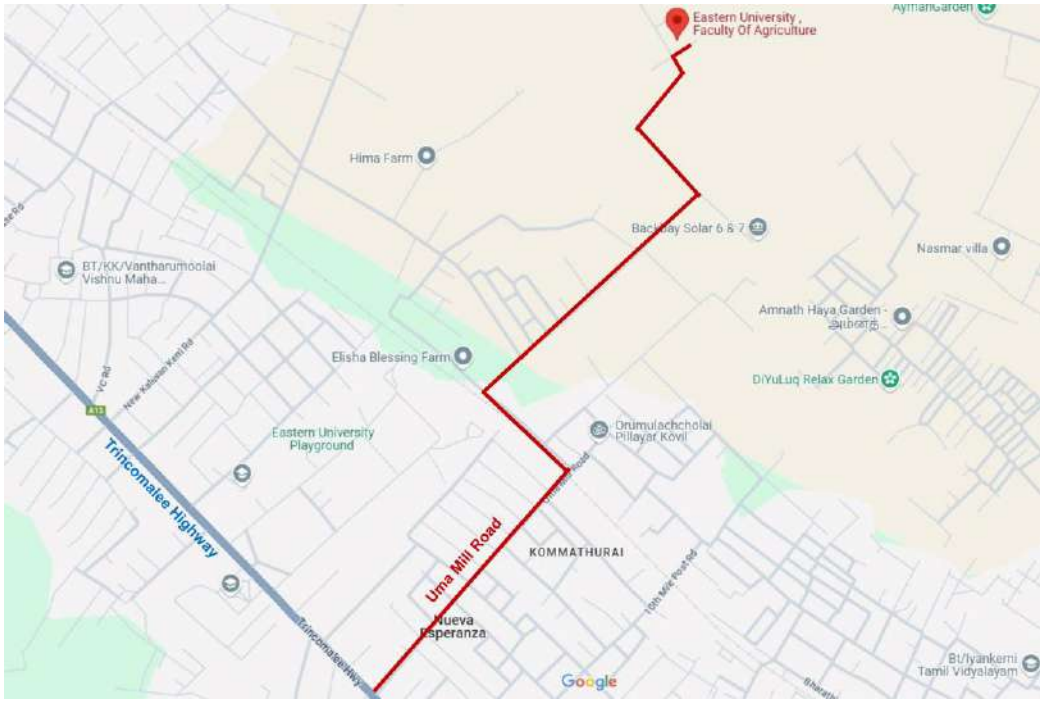
d. ‘V. Arulnandhy Commendation Award in Agricultural Biology’ endowed by Dr. V. Arulnandhy, is awarded to the student who obtains the best grade in the core courses offered by the Department of Agricultural Biology at the Bachelor of Science Honours in Agriculture degree programme in the first attempt.

e. ‘Subalini Elango Memorial Award in Animal Science’ is awarded to a student who has specialized in the Department of Animal Science. The eligible candidate should obtain First Class or Second Class (Upper) in the Bachelor of Science Honours in Agriculture degree programme, passing all courses (minimum of GPA 2.0 in each course) offered during the core programme and the highest GPA not less than 3.3 in advanced courses, in the first attempt conducted by the Department of Animal Science in the Bachelor of Science Honours in Agriculture degree programme.

f. ‘Sivasubramaniam Raveendranath Memorial Gold Medal for Agricultural Biology’ will be awarded to the student who has specialized in the Department of Agricultural Biology. The eligible candidate should obtain First Class or Second Class (Upper) in the B.Sc in Agriculture degree programme passing all courses (minimum of GPA 2.0 in each course) offered during the core programme and the highest GPA not less than 3.3 in advanced courses, in the first attempt conducted by the Department of Agricultural Biology in the B.Sc in Agriculture degree.

9.0 Road Map


Polonnaruwa
Welikanda
Thirukkondaladimadu
Kalkudah
Oddamavadi
Manampitiya
Dimbulagala
Eastern University ,
Faculty Of Agriculture
Nuwaragala
Wasgamuwa
National Park
Aralaganwila
Damminna
Eravur
Sirlpura
Batticaloa
Karadiyanaru
Kattankudy
Dehiattakandiya
Maduru Oya
National Park
Sandunpura
Kurukkalmadam
Maraka
Nawa
Madagama
Mangalagama
Kaluthavalai
Hettipola
Maha Oya
Mahaweli Ganga
Maruthamunai
Kalmunai
Sainthamaruthu
Padiyatalawa
Hasalaka
Kehelulla
Uhana
Sammanthurai
Mahiyanganaya
Nintavur
Ekiriyankumbura
Ampara


Eastern University ,
Faculty Of Agriculture
Hima Farm
Nasmar villa
BT/KK/Vantharumoolai
Vishnu Maha...
Amnath Haya Garden -
Elisha Blessing Farm
DiYuLuq Relax Garden
Eastern University
Playground
Drumulachcholai
Pillayar Kovil
Trincomalee Highway
Uma Mill Road
KOMMATHURAI
Nueva
Esperanza
Bt/Iyankerni
Tamil Vidyalayam
Google

Faculty of Agriculture
Eastern University, Sri Lanka