POST GRADUATE STUDENT HANDBOOK

2022/2023

FACULTY OF AGRICULTURE

UNIVERISTY OF RUHUNA

MSc in Crop Production Technology (MCPT)

(SLQF – 10)

DEPARTMENT OF CROP SCIENCE

FACULTY OF AGRICULTURE

UNIVRSITY OF RUHUNA

CONTENTS

VISION OF THE DEPARTMENT

Advance technologies in the spheres of plant sciences to meet present and future challenges in augmenting plant productivity

MISSION OF THE DEPARTMENT

Encompass agronomy and physiology of plant species, which are nutritional, industrial, medicinal and environmental importance.

1. INTRODUCTION

University of Ruhuna

University of Ruhuna was established on 1st September 1978, as Ruhuna University College by a Special Presidential Decree. Currently, University of Ruhuna constitutes with ten faculties, namely Agriculture, Engineering, Fisheries and Marine Sciences & Technology, Humanities and Social Sciences, Management & Finance, Medicine, Science, Technology, Allied Health Sciences and Graduate Studies.

Faculties of Humanities and Social Sciences, Fisheries and Marine Sciences & Technology, Management & Finance, Science and Graduate Studies are located at the main University premises at Wallamadama (Matara). Faculties of Agriculture, Engineering and Medicine, Allied Health Sciences & Faculty of Technology are located in Mapalana (Kamburupitiya), Hapugala (Galle), Karapitiya (Galle) and Karagoda-Uyangoda (Kamburupitiya) respectively. The central administration unit of the University is also located at the Wallamadama University complex.

The University offers Bachelor, Master and PhD degrees in their respective disciplines. In addition, Diploma and Certificate courses are conducted in various disciplines.

Faculty of Agriculture

The Faculty of Agriculture, one of the pioneering faculties of the University of Ruhuna, is located at Mapalana, 16 km from Matara, and 2 km from Kamburupitiya along Matara-Kamburupitya main road. The faculty premises of 50 ha includes several academic and administration buildings which house lecture theaters, laboratories, the library, student residences, student recreational facilities, canteen, auditorium etc. supporting academic and research programmes. The faculty farm is also located within its premises, integrating farm activities with teaching, research and outreach programmes.

The faculty of Agriculture strives to contribute to the national development through the propagation of new knowledge and producing skilled, efficient and marketable graduates. Resources of the faculty are concentrated to offer 03 undergraduate degree programmes viz. BSc Agricultural Resource Management and Technology, BSc Agribusiness Management and BSc Green Technology all being 4-year career-oriented degrees. At present, the faculty has seven academic Departments of study, namely Departments of Agricultural Biology, Agricultural Economics, Agricultural Engineering, Animal Science, Crop Science, Food Science and Technology and Soil Science. All three-degree programmes fall into the SLQF level 06 and the courses are conducted in the English medium. The faculty admits 250 students annually and the faculty identified itself as the leading center for agricultural research, extension and teaching in the southern Sri Lanka.

The Faculty also offers six MSc degree programs through the Faculty of Graduate Studies, University of Ruhuna to meet the contemporary needs of the graduates in the region in addition to offering MPhil and PhD degrees by research. Equipment and laboratory facilities for teaching and research at both undergraduate and post-graduate levels are available in each Department of Study to carry out both fundamental and applied research. Presently, 7 post-graduate courses are offered by the faculty, i.e. MSc Agricultural Economics and Resource Management, MSc Agri-Business Management, MSc Animal Science, MSc Food Science & Technology, MSc Green Technology, MSc Crop Production Technology and MSc Crop Protection which is jointly offered with Faculty of Science.

Department of Crop Science

The Department of Crop Science offers a comprehensive and rigorous academic programme for the BSc in Agricultural Resources Management &Technology. That provides the students with the requisite knowledge, experience and skills for sustainable production of plant species, which are nutritional, industrial, medicinal and environmental importance. To this end, it offers a broad spectrum of courses such as seed biology, production and management of crops, crop physiology, post-harvest management, cropping systems, agro-forestry, forestry, controlled environment agriculture, bio-statistics and climate change. The Department also supports the other degree programmes of the Faculty of Agriculture, namely Agribusiness Management and Green Technology by offering basic courses relating to Crop Science.

The Department provides a right blend of theoretical knowledge and practical training through a "student-centric approach" so that the graduates produced have the capacity and capability to develop solutions to the issues and challenges in crop production and allied fields. It also conducts a Master's programme in Crop Production Technology and provides opportunities for higher studies leading to MPhil and PhD as well. While promoting academic and research excellence, the Department has forged close links with the community and industry making the academic offerings and research endeavors of the Department relevant to the world of work.

The Department of Crop Science, with its dedicated and competent staff, is emerging as a leader in proffering solutions to local and national issues and challenges in the realm of agriculture.

The Department consists of a teaching laboratory, research laboratory and plant tissue culture unit, which are modestly equipped to cater to the ongoing teaching and research programs of the Department. Further, two plant houses and a protected agriculture unit facilitated with hydroponics system is also available to serve the same. In recognition of the scientific merits of the research programs conducted in the Department, numbers of research grants are offered to some senior members of the Department from national and international funding agencies.

2. OFFICERS OF THE INSTITUTE

a. Administration
b. Board of Management
c. Coordinating Committee
d. Boards of Study
e. Organizational/Operational Structure of the Institute

3. POSTGRADUATE MASTERS DEGREE BY MASTER OF SCIENCE (M.Sc.) DEGREE

MSc in Crop Production Technology (MCPT) (SLQF – 10)

a. Introduction

Agriculture is an art of living with nature and also a technology which unifies the living and nonliving world. Furthermore, the efficiency of each production unit either domestic animals or crops has been enhanced through the use of technology to control and regulate a small limited part of nature. Technological innovations in Agriculture, resulting in higher productivity have been emulated worldwide. Proper understanding of the weather and climate, land and soil, crop and cropping systems, agronomy of crop production, pest and disease management etc., have generated enormous technologies, which have been passed from generation to generation. At the same time, modern science has created a number of technologies, which could make an impact on agricultural productivity. As Agriculture remains a strong sector in Sri Lankan economy, exploitation of advances in technology and biology is of particular importance.

Despite a lot of research findings on crop production is available; application of those findings for agricultural development is still lacking, mainly due to lack of skilled human resources. Therefore, skill development in crop production technology should be given priority in agricultural education, not only to the secondary education but also up to the postgraduate education. In the proposed postgraduate program of crop production technology envisage provision of technological knowhow to students, commencing from crop environment, agronomic aspects of planting to harvesting, technological aspects of crop production and post-harvest processing up to the marketing.

b. Award of the Master of Science and Postgraduate Diploma in Crop Production Technology

The Degree of Master of Science, which may be abbreviated as M.Sc. and Post Graduate Diploma which may be abbreviated as PG. Dip. may be awarded by the University of Ruhuna, Sri Lanka, hereinafter referred to as the University, to a student who has:

a) fulfilled the eligibility requirements set out in Section 2; and
b) been accepted by the Department of Crop Science of the Faculty of Agriculture hereinafter referred to as the Department and the Faculty respectively; and
c) thereafter been registered as a full-time or part-time student in the University with the approval of the Senate of the University (hereinafter referred to as the Senate) for the required duration as set out in Section 5; and
d) paid the prescribed fees; and
e) followed the prescribed course as outlined in Section 7; and
f) passed the examination as set out in Section 8.

will qualify for the M.Sc. after completion of the requirement for graduation.

c. Admission Requirements

The eligibility requirements for the M.Sc. degree course and PG. Dip. shall be decided by the Department subject to the minimum eligibility requirements specified in Section 2.2 and approved by the Faculty and the Senate.

An applicant fulfils the minimum eligibility requirements to follow the prescribed course leading to the Degree of Master of Science, if he/she has: a degree in Agriculture/Biological Sciences or any other relevant fields from a recognized University/Institution as judged by the Faculty and approved by the Senate (minimum GPA requirement is 2.75).

WITH

Proficiency in English as judged by the Faculty and approved by the Senate

AND

Satisfactory evidence of the capacity and attainments to attend full/part time classes as judged by the Faculty and approved by the Senate.

The eligibility requirements for the Postgraduate Diploma program are same as those entering the Master's degree program.

A person who has already registered as an internal/external student of any university or higher educational institution shall not be eligible for registration.

Postgraduate Diploma Program

The eligibility requirements for the post graduate diploma program are the same as those entering the Master's degree program.

d. Registration

An applicant selected for admission may register having paid the prescribed fees. The registration procedure shall be as determined by the Senate. The effective date of registration will be the date of commencement of the courses of the program. In the case of students, who wish to do the research component first, the effective date of registration will be the date of proposal defense and the acceptance of the proposal by the Academic Advisory Board as shall be approved by the Senate on the recommendation of the Department.

If in the opinion of the Department, the performance of a student is consistently unsatisfactory over a period of six months, his/her registration may be cancelled by the Senate on the recommendation of the Faculty.

The registration for the M.Sc. degree may be reverted to the Postgraduate Diploma and the student considered for the award of the PG-Dip. by the Senate on the recommendation of the Faculty, under the regulations governing the award of the Postgraduate Diploma, at the end of the minimum period of registration or anytime thereafter, upon completion of 30 credits from course works, provided:

(a) the student opts to obtain the Postgraduate Diploma; or
(b) there are other valid reasons for such a change; or
(c) the performance of a student for the MSc Degree is not up to the requisite standard in the opinion of the Department.

e. Course Structure and M.Sc. Research Component

a) The MSc in Crop Production Technology is based on course works for the first two semesters followed by a research project which spans third and fourth semesters. The course works consist of lectures, practical classes, tutorials, seminars, case studies and field visits. The medium of instruction is English and the course is conducted in weekends at the Department of Crop Science, University of Ruhuna.

   Apart from the sound theoretical knowledge provided in the first two semesters, emphasis is given to practical experience, experimentation in laboratory, field and controlled environments, techniques and instruments for measuring crops and their environments, computer based

methods of data collection and analysis, and the interpretation and presentation of scientific information. Those who have obtained 30 credits for course works are eligible for the thesis defense examination which will be held at the end of the fourth semester.

Student upon completion of course works with 30 credits, if he/she wishes to discontinue the study program are eligible for a PG. Dip. in Crop Production Technology. The candidate who completes both course works and research component are only eligible for the M.Sc. degree upon the satisfactory completion of both components within the maximum period of registration. M.Sc. or the PG. Dip. can be pursued on both a full-time and part-time basis. The minimum and maximum duration of the registration for the programme shall be in accordance with the section 5.

b) One credit is equivalent to 15 hours of lectures or 30 hours of practical classes or 45 hours of industrial/field visits. Students shall not exceed the maximum number of allowed modules and credit limits per semester. Given below is the maximum number of credits and modules, a student can take per semester.

	Full time	Part time
Maximum number of modules per semester	08	04
Maximum number of credits per semester	20	10

c) The tentative list of modules offered for a particular semester will be notified to the students before registration for the course and students are required to choose the sufficient credits in consultation with the Course coordinator. Modules in the tentative list will only be offered if sufficient numbers (at least five students) subscribe to the module. Students will be notified before course registration if a module originally selected is not offered subsequently. Students are required to add modules from among the other modules offered to compensate for credit requirements if modules originally offered are subsequently found to be not available.

d) In case of failure and in the event such a module is not offered in a subsequent year a student who fails to earn credits in the original attempt has to register for a different module/s to satisfy the credit requirements for graduation. Students have total freedom to select the modules and to add or drop them during the first two weeks of lectures. All adding and dropping should be according to the procedure outlined by the Course coordinator at the beginning of the course.

e) Research Project

As a part of the program, students are required to get 30 credits from the research project during which they will be guided and advised by a supervisor/s appointed by the Senate on the recommendation of Academic Advisory Board. A wide range of topics is available within the research interests of members of the teaching panel. A research proposal prepared by each student should be submitted to the Academic Advisory Board and upon a notification; a presentation should also be done. Duration of 8 to 12 months shall be spent on the research investigation on a full time basis or 16 to 24 on a part time basis. Thesis of the research project is expected to be submitted after the specified period as appropriate. However, to be eligible to submit the thesis, students are required to complete the relevant course works with 30 credits. They shall maintain a minimum overall GPA of 2.5 also. Duly completed thesis with the signatures of all supervisors and Head of the Department of Crop Science should be submitted to the SAR/Examinations, University of Ruhuna. SAR/Examinations, taking the comments of examiners into consideration, will then arrange the thesis defense examination, which would be within a period of three months upon submission of thesis.

f) However, if any minor correction is to be made as notified by the examiners, students are required to re-submit the corrected bound thesis within a period of six weeks. In the case of major revisions, the student may take a maximum period of six months to re-submit the thesis. In such a situation, student should register for an additional semester. The defense examination shall include an oral presentation followed by a defense by the candidate of his/her thesis and overall knowledge on the discipline areas. If a thesis is judged to be satisfactory, the Academic Advisory Board will grade it: Excellent, Very Good, Good or Fair. Those who obtained a satisfactory grade from the thesis defense examination will only be qualified for awarding of the degree.

g) The Academic Advisory Board consists of following members. Head of the Department (Chairperson) Course coordinator (appointed by the Head/Crop Science) Professors and Senior lecturers of the Department Two representatives the other departments of the Faculty Two representatives from the other relevant institutions

f. Duration of the program

The duration of the M.Sc. degree program shall be:

a) 24 to 30 months for full-time students, and
b) 36 to 42 months for part-time students.

On a written request of a student, he/she may be allowed to change over from full-time registration to part-time registration of the course or vice-versa. In that case, the minimum period required for completing the remaining part of the course shall be decided by the Senate in accordance.

The minimum duration for the Postgraduate Diploma subjected to the satisfaction of the credit requirement as set out in the bylaws shall be:

a) 12 to 15 months for full-time students, and
b) 18 to 24 months for part-time students.

The Senate may extend the period in any particular case on the recommendation of the Faculty under exceptional circumstances.

g. Course Outline

The M.Sc. degree course shall consist of the following:

a) Attending regular lecture courses at the University as envisaged in the curriculum recommended by the Faculty and approved by the Senate;

b) Preparation and presentation of one or more seminars on topics recommended by subject coordinators and approved by the Course coordinator and the Head of the Department;

c) Any other assignments such as laboratory work, tutorials and field works/trips envisaged in the curriculum approved by the Faculty and the Senate;

d) Research work in a specified area under the guidance of a Supervisor or Supervisors, the results of which shall be presented in the form of a Dissertation. The format of the Dissertation and the number of copies to be submitted shall be decided by the Faculty. The Supervisor(s) shall be assigned to a student by the Course coordinator and Head of the Department concerned. Minimum duration of registration for research shall be according to section 3.5.

List of Courses

Module 1 : Compulsory Courses		
Course No.	Course Name	Credit No.
CS 5301	Principles of Agronomy and Horticulture	3
CS 5201	Integrated Plant Nutrient Management	2
CS 5202	Applied Crop Physiology	2
CS 5203	Principles of Plant Protection	2
CS 5204	Bio Statistics	2
CS 5205	Organic and Biodynamic Agriculture	2
CS 5206	Agro-ecology and Sustainable Agriculture	2
CS 5207	Commercial Floriculture	2
CS 5208	Management of Aquatic Plants	2
CS 5209	Agro-forestry and Woodland Management	2
CS 5210	Plant Tissue Culture Technology	2
CS 5211	Protected Agriculture Technology	2

Module 2 : Elective Courses		
CS 5212	Current issues in Crop Production	2
CS 5213	Energy Plantations	2
CS 5214	Unutilized and Underutilized Crops	2
CS 5215	Crop Waste Management and Integrated Farming	2
CS 5101	Seminars	1
CS 5216	Statistics for Crop Technology Research	2
CS 5217	Production Technology of Plantation Crops	2
CS 5218	Landscape Gardening	2
CS 5219	Production Technology of Fruit Crops	2
CS 5220	Production Technology of Field Crops and Vegetables	2
CS 5221	Production Technology of Export Agricultural Crops	2
CS 5222	Post harvest Technology of Agricultural Crops	2

Compulsory Courses

CS 5301: Principles of Agronomy and Horticulture -3 credits (30T + 30P)

The course is designed to introduce principles of Agronomy and Horticulture through which participants gain acquaintance with the cultivar diversity, cultivation, harvesting, postharvest storage, processing, marketing and common diseases and pests of major crops. The importance of crops as related to the world economy and food security is described. The cultivars and producing countries, different methods of propagation, fertilization, irrigation, weeding, use of plant growth regulators in crop production, harvesting and processing of major crops are described. Reasons for use of nurseries, design a commercial nursery, nursery components, structures (propagators, shade and hardening houses), planting materials, nursery beds, pest and disease control of nurseries, potting, potting media and potting mixtures, containers used for potting and their relative advantages are discussed. Orchard techniques and practices, field sanitation and hygiene, good agricultural practices, definition of pruning and training, importance of pruning and training, different types of pruning and training techniques are also discussed.

CS 5201: Integrated Plant Nutrient Management - 2 credits (15 T + 30 P)

Essential plant nutrients and their functions, nutrient cycles: nitrogen, phosphorus potassium and sulfur cycles in soils, calcium, magnesium and micro-nutrients, general concepts of soil fertility, factors affecting soil fertility, techniques of evaluating soil fertility, different approaches to managing and maintaining soil fertility, composting, organic manures, soil amendments, types of fertilizers, fertilizer formulation, methods of fertilizer application and management, biological management of soil fertility and rhizosphere effect, nutrient budgeting, toxic elements in soils, deficiency symptoms and their correction, nutrient requirements and fertilizer recommendations for specific crops/cropping systems.

CS 5202: Applied Crop Physiology -2 credits (15T + 30 P)

Introduction to agro-meteorology , economic significance and importance of weather, the earth's atmosphere, atmospheric energy, atmospheric moisture and precipitation, atmospheric motion, weather patterns, global climatic change and variability and its effect on Agriculture, seed physiology : dormancy and germination, environmental influences on crop growth and development, crop environment interactions, crop geometry and competition, adaptation of crop plants to stress factors.

Physiology of reproductive growth and development: photoperiodism and penalization, plant growth analysis, source-sink relationship, photosynthate partitioning in relation to yield, modification of yield potential by chemical and cultural means, new advances in cropping systems.

CS 5203: Principles or Plant Protection -2 credits (15 T + 30 P)

Physical, chemical, biological, genetic, biotechnological methods of pest, disease and weed control, botanical pesticides and bio pesticides, pest-host plant relationships, pest-resistant transgenic crops (GMOs), Integrated Pest Management, economics of pest control, pest surveillance and forecasting, sanitary and phytosanitary issues, quarantine for plant health and biological control agents, Integrated Disease Management, climate change and crop protection, GIS and Remote Sensing for crop protection, pesticide residues and their limits (MRL) in different countries.

CS 5204: Bio Statistics - 2 credits (30 T + 00 P)

The importance of statistics in biological research, basic principles of statistic, types of data, summarizing data, exploratory data analysis, confidence intervals, graphical tools, common statistical distributions, testing hypotheses, t-test, F-test, chi-square test, statistical computing, simple analysis for continuous data, simple linear regression and one-way analysis of variance, relationships between variables, comparison of regression lines, multiple regression, common non-linear models, data handling and use of spread sheets and presentation of data.

CS 5205· Organic and Biodynamic Agriculture- 2 credits (15 T + 30 P) .

What Organic and Biodynamic Agriculture? the origins of Organic Agricu1ture, organic certification, Organic principles; Bio diversity, diversification and integration of enterprises, sustainability, natural plant nutrition, natural pest management, integrity, tools and practices; crop rotation, green manures and cover crops manuring and composting, intercropping and companion planting, biological pest control, sanitation, tillage and cultivation, mulching, supplemental fertilization, biorational pesticides, foliar fertilization, esoteric practices, record keeping, other tools and practices .

CS 5206: Agroecology and Sustainable Agriculture - 2 credits (15 T +30 P)

What is Agroecology? Principles of Agroecology, management of ecosystem and agroecosystem, hierarchical structure of agroecosystem vs ecosystem, features of agroecosystems, mechanisms to improve agroecosystem, bio diversification of agroecosystems, ecological processes to optimizing in agroecosystems, system thinking approach, what is a system? importance of system thinking approach and why use system thinking approach, holistic and reductionism approach, farming system as a apart of an environment/society (Systems Thinking approach for fanning system management), "Systems Thinking approach" a useful tool to solve complex problems, agroecology and farming system, ecological farm management, effective management of earthworms and Vermiculture.

Introduction to Sustainable Agriculture, sustainable farming systems such as sustainable soil and nutrient management, water/irrigation management, pest and disease management etc., indigenous knowledge use in ecological farming system.

CS 5207: Commercial Floriculture Technology -2 credits (15T + 30P)

Introduction to floriculture (Definition of flower and research range of floriculture, role of flower in men's life, history and status quo of floristry in Sri Lanka), principles and methods of species classification ("in terms of life style, cultivation way, ornamental character, landscaping purpose"). germplasm resources with distribution characteristics, ecological requirements , morphology and physiology of flowers and foliages, basic growth rule of flowers, propagation principles of flowers and foliages (sexual, clonal, division, cutting, grafting, layering, spore and tissue culture) basic principles of flower application, crop and postharvest management of cut flowers (Orchids, Anthurium, Roses, Carnation, Gerbera, Petunia), cut foliages (Draceana, Diefanbanchea, Aglonima) and ornamental species (Diffenbachia, Policias, Palms etc.), packing, labeling and marketing of floricultural products, developing trends of flower industry in the world.

CS 5208: Management of Aquatic Plants -2 credits (15 T + 30 P)

Introduction to seaweed farming, economically important seaweeds, geographical distribution, taxonomy and principles of classification, biology, domestication, farming techniques, industrial uses and processing, present status and prospects of seaweed farming in Sri Lanka, developing trends of seaweed industry in the world.

Introduction to economically important microalgae, geographical distribulion , taxonomy and principles of classification, biology, domestication, farming techniques, industrial uses and processing, present status and prospects of

microalgae cultivation in Sri Lanka, developing trends of microalgae industry in the world.

Introduction to economically important aquatic higher plants and their cultivation measures.

CS 5209: Aero-forestry and Woodland Management -2 credits (15 + 30 P)

Introduction to Agroforestry, concepts and definition of Agroforestry, classification of Agroforestry systems, description of Agroforestry systems, potential roles of Agroforestry, ancillary benefits of Agroforestry systems, management of tree- crop component in Agroforestry systems, choice of tree species for Agroforestry systems, tree- crop lnterface, opportunities problems.

Introduction to Slviculture, identification/qualities of tree species for manmade forests tree biology and improvement, woodland ecology), establishment of different type of forest nurseries and maintenance, field establishment and maintenance, timber harvesting systems and replanting. Forest menstruation and Inventory maintenance, identification of stem characters, stem measurements; basal area, tree height, timber volume, volume increment, yield forecasting, forest policies, legal framework in Sri Lanka, urban forestry, current issues in forestry, forest based products and non wood timber products.

CS 5210:Plant Tissue Culture Technology -2 credits (15 T + 30 P)

Introduction to plant tissue culture, history of plant tissue culture laboratory organization and maintenance, preparation of stock solutions, different culture media used for tissue culture, plant growth regulators in tissue culture, selection and maintenance of mother plants, selection of expants, Surface sterilization , culture establishment, proliferation, rooting, acclimatization ,meristem culture for virus free plants, artificial seed production.

CS 5211:Protected Agriculture Technology -2 credits (15 T + 30 P)

The history and world status of protected Agriculture, present status of protected agriculture in Sri Lanka, potential of expanding , limitation, different methods of protected Agriculture, use of protected houses, hydroponics, aeroponics, principles of construction of green houses, environmental control and management of green houses, selection of cultivars, nursery management, fertilization/fertigation, prevention of pest and diseases, harvesting criteria for the quality products, advantages and disadvantages of hydroponics system.

Elective Courses

CS 5212: Current Issues in Crop Production -2 credits (30 T + 00 P)

Current issues in crop production that are of both local and global interest, their possible future impacts on crop production systems and the environment, future options and possible strategies, examples of issues that will be addressed include: the future of genetically modified crops, impact of crop production on biodiversity and prospects for organic crop production . The content will change every year to reflect current issues in crop production.

CS 5213: Energy Plantations -2 credits (15 T + 30 P)

Introduction to renewable energy, different sources of renewable energy, what is biomass energy, potential and future prospects of biomass energy, types of energy crops, bio geographical distribution, regeneration capacity, propagation and their establishment, management, harvesting and processing techniques.

CS 5214: Unutilized and Underutilized Crops -2 credits (15 T + 30 P)

Medicinal plants as an important bio-resource, ethno-botanical identification and bio geographical distribution of important medicinal plants, multiple uses and value addition, need for conservation, cultivation as a tool for conservation, propagation and management systems of medicinal plants, unexploited and underexploited fruit crops, ethno-botanical identification, bio geographical distribution and their potential to be commercialized .

CS 5215: Crop Waste Management and Integrated Farming -2 credits (15 T + 30 P)

1ntroduction to crop waste management, types of crop waste, their collection, transportation, storage, utilization (raw material, animal feed, manure, biogas production, energy generation and land application for soil conservation, etc), treatments (chemical, physical and biological treatments), safe disposal, environmental impacts of waste disposal.

Introduction to integrated farming, definition, philosophy of integrated fanning, potential advantages and disadvantages, potential and necessity for dissemination of integrated farming, existing integrated farming system (traditional and modern Chinese Integrated farming systems, present status of integrated farming systems In other Asian countries and Europe), design criteria for integrated farming systems,

different type of integrated farming systems; crop/livestock integration, crop/fish Integration, livestock/fish integration and crop/livestock/fish integration.

CS 5216: Statistics for Crop Technology Reseraches-2 credit (15 T + 30 P)

Principles of crop experimentation, experimental design, principles behind good experimental design, replication , blocking , randomization, choice of treatments, practical design for experiment s in the field, glass glasshouses, controlled environment and laboratories, sources of error and error control, analysis of variance (ANOVA), alternatives where ANOVA cannot be used, interpretation of the output, sample surveys, different approaches to select sampling units and the sampling frame, sampling for monitoring, summarizing sample data, sampling to make decisions, case studies drawn from a range of applications.

CS 5217: Production Technology of Plantation Crops: 2 Credits (15 T+30P)

Introduction to plantation crops, ecological requirements, taxonomy, morphology, physiology, crop management and postharvest management techniques of tea, rubber, coconut, oil palm and sugarcane.

CS 5218: Landscape Gardening -2 credits (15 T + 30 P)

Introduction to landscape gardening, historical concepts and development of garden designs, concepts and landscape traditions of Sri Lanka evolution of modern landscape gardening, technical aspects of designing, landscape drawing, ecological and environmental concerns in designing, introduction to soft landscaping, selection of plants and classify plant materials ,creative planning and value of natural shade loving plants for outdoor landscaping , designing with trees, shrubs, perennials, annuals, vegetables, house plants and cut flowers, practice planting methods, manage a nursery, maintain a landscape garden, brief introduction to hard landscape materials and technology.

CS 5219: Production Technology of Fruit Crops - 2 credits (15 T + 30 P)

Introduction to fruit crops, ecological requirements, taxonomy, morphology , physiology , crop management and post-harvest management techniques of banana, mango, pineapple, avocado, citrus, rambutan, grapes, cashew, dragon fruit, papaya and minor fruit crops.

CS 5220: Production Technology of Field Crops and Vegetables - 2 credits (15 T + 30 P)

Introduction to field crops and vegetables, their nutritional value, ecological requirements, taxonomy, morphology, physiology, crop management techniques and post-harvest management of cereals, vegetables, root crops, condiments, leafy vegetables, legume crops, oil crops, narcotic crops and fiber crops.

CS 5221: Production Technology of Export Agricultural Crops - 2 credits (15 T + 30 P)

Introduction to export agricultural crops, ecological requirements, morphology, physiology, crop management techniques of cinnamon, pepper, coffee, cocoa, citronella, cloves, cardamom, nutmeg, betel, areca nut, vanilla, garcenia and tamarind, value addition and export standards.

CS 5222: Post harvest Technology of Agricultural Crops - 2 credits (15 T + 30 P)

Introduction to post harvest systems of fruits, vegetables, grains, legumes and export agricultural crops/spices, factors associated with loss and damage, methodology of 1oss assessment and estimation, preservation and processing of fruits and vegetables (drying and dehydration. refrigeration and freezing, chemical treatment and irradiation, preserved by sugar and salt, fermentation), post-harvest systems for grains and legumes, typical grain handling and distribution, chains used in Sri Lanka, harvesting, threshing, drying, storage. Milling, grading and packaging, marketing, grain utilization (parboiled rice, starch processing), processing and manufacturing of spices (pepper, cinnamon, nutmeg and mace, clove, chilies, ginger, turmeric, cardamom and vanilla).

abbreviation:

T-Theory - Number of hours per credit is 15

P-Practical - Number of hours per credit is 30

h. Evaluation Procedures

a) Most of the works are assessed on an individual basis, but some small-group assignments may also be included.

b) The performance of a student shall be assessed on the basis of the following:

a) Written examination(s);
b) Seminars;
c) Assignments, where appropriate;
d) Examination of the dissertation and oral examination.

c) The module coordinator, lecturers/examiners for each module conducted in a semester shall be nominated by the Department and recommended by the Faculty Board and approved by the Senate. A committee comprising of the Course coordinator, module coordinators and lecturers/examiners for all modules under the supervision of the Head of the Department, is responsible for evaluating the performance of a student in all modules offered by the Department and for issuing the respective grade.

d) A student who has missed an examination because of illness or other compelling reason may appeal with supporting documents to the Dean for an Academic Concession within two weeks from the date of the examination. An Academic Concession, which enables the student to repeat the module or attempt the supplementary evaluation, if applicable, as the first attempt, shall require the approval of the Faculty Board.

e) An outline of the module, class activities, assignments, examinations and weights assigned shall be announced to the students by the coordinator/ lecturer-in-charge at the commencement of the module.

- Revision

This by-law is subject to revision from time to time.

- Calculation of GPA

Grades and Grade Points shall be assigned for each module according to the following table.

Marks (%) (out of 100)	**Grade**	**Points**
≥85	A+	4.0
80 - 84	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
40>	F	0

For passing a course, the student should obtain a minimum of C grade. Overall Grade Point Average (GPA) is calculated using the formula;

$$GPA = \frac{\sum C_i G_i}{\sum C_i}$$

Where; C_i is the number of credits for the i^{th} course G_i is the grade point obtain for the i^{th} course.

Candidates should maintain an overall minimum GPA of 2.5 throughout the course. Candidates who obtained a lower grade than D for a particular module should repeat the course at the next immediate opportunity and in such a situation, he/she shall not be given a grade above B, even if the student obtains more than 69 marks. However, if a student has obtained a Cor D grade for a course he/she has the option either to repeat the course or to keep the grade as it is, provided he/she can maintain the overall minimum GPA requirement. Normally only one re-examination shall be allowed

A student who has missed an examination because of illness or other compelling reason may appeal with supporting documents to the Dean for an Academic Concession within two weeks from the date of the examination. An Academic Concession, which enables

the student to repeat the module or attempt the supplementary evaluation, if applicable, as the first attempt, shall require the approval of the Faculty Board.

i. Effective Date of the M.Sc. Degree Program

The effective date of the Master of Science Degree/Postgraduate Diploma shall be the first day of the month after the successful completion of the following:

a) written examination(s), where appropriate;
b) seminar(s);
c) assignment(s), where appropriate;
d) examination of the dissertation and oral examination.

j. Release of Results

Results of a candidate at the written examinations shall be released after the meeting of Board of Examiners chaired by the Vice Chancellor, unless the Results Board recommends withholding of the results for specific reasons. Results board of the end semester examinations consists of following members;

- Vice Chancellor (Chairman)
- Dean of the Faculty of Post Graduate
- SAR (Examination)
- Head of the Department
- Course coordinator/MSc. program
- Professors of the Department of Crop Science
- All examiners of the stipulated module

k. Postponements / Withdrawals /Re-Registration

Every student should inform the Director through the Board of Study with documentary proof for leave to be taken if any and the reasons for any postponement of the degree programme. However, all students should complete their degree programmes within the stipulated time period from the date of registration (see the Completion of a Programme section), except on specific reasons acceptable to the Board of Management.

a) Withdrawal from Programme

Any student who failed to register for two consecutive semesters without the Director's approval, or has exceeded the time limit permitted for each degree programme shall be deemed to have voluntarily withdrawn from the programme.

b) Re-registration for M.Sc./MBA degree

A student who had withdrawn/discontinued from a degree programme, but admitted again as a fresh student will come under the new regulations as at the date of his/her new registration. In such a case, only 50% of the current course fee will be charged if the student has already paid for the previous programme in full.

c) Transfer of Credits

A student can transfer a maximum of 10 credits earned within a period of 10 years from a previously followed degree programme to his/her newly registered programme at the PGIA, on the recommendation of the relevant Board of Study of the new degree programme. However, if a student had withdrawn from a degree programme previously registered at the PGIA and re-registers for the same degree programme within 10 years, the credits earned from the previous programme may be transferred to the new programme, up to a maximum of 2/3rd of the course work credit requirement of the new degree program (M.Sc./MBA), based on the recommendation of the relevant Board of Study. The 10 year period is calculated from the end date of the previous degree programme.

4. PAYMENT OF FEES

The schedule of fees shall be as recommended by the Department subject to approval by the Faculty and the Senate.

Application fee (Rs. 1000.00)
Registration fee (Rs.2500.00 per year)
Tuition fee (Rs. 25000.00 per semester)
Library fee (Rs. 2000.00 (refundable) + Rs. 1000.00 per year)
Internet/Computer fee (Rs. 1000.00 per year)
Identity card fee (Rs. 300.00)
Examination fee (Rs.1000.00 per subject)
Thesis defense examination/submission fee (Rs. 12000.00)

5. FACILITIES AVAILABLE

a. Lecture Rooms and Auditoriums

b. Computer Unit

c. Library

d. Student Counseling and Welfare Services

e. Medical Center

f. Learning Management System (LMS)

g. Management Information System (MIS)

h. The Research Farm

i. Meteorological Station