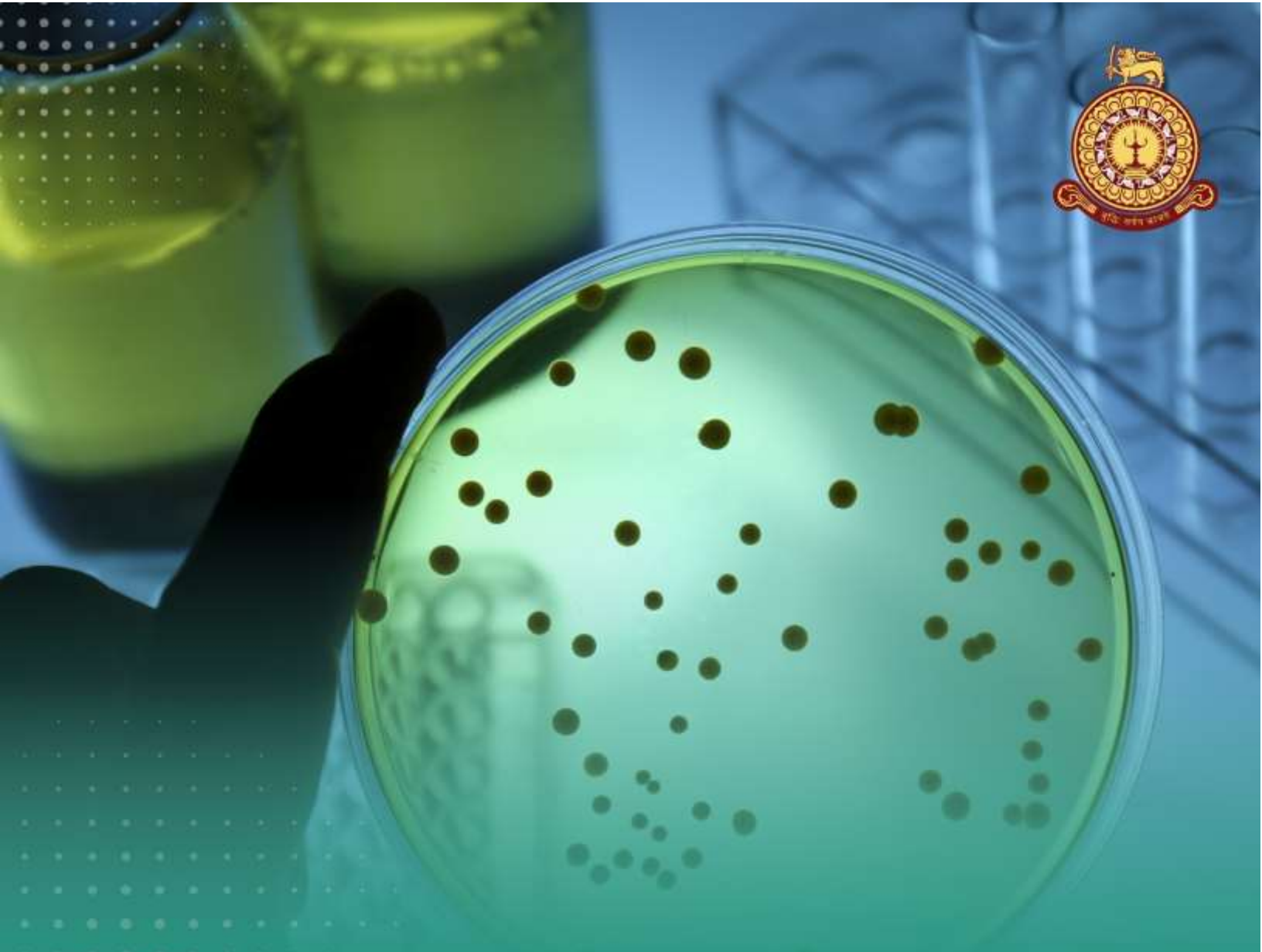

Master of Science in Agricultural Microbiology

Department of Plant Sciences
University of Colombo

E-Handbook - 2026

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1. Introduction to MSc. in Agricultural Microbiology

Agricultural microbiology is a sector of science that deals with plant-associated microbes and their roles in agriculture-related industries. This branch of science explores microbes, their processes and the relationships with plants with the intention of exploiting them to enhance productivity in agricultural industries while safeguarding the environment. In a world teeming with microorganisms, benefits and threats are continuously posed to humans, animals, plants and the environment as a whole. Threats come from microbial pathogens that perpetrate a wide range of plant and animal diseases, reducing agricultural productivity. Concurrently, a wide range of microorganisms contribute positively to plant health, growth, and yield, improving overall productivity. Thus, studies on agricultural microbiology satisfy the demand for new knowledge from the society, consumers, and producers, required for the utilization of microbial resources in agro-industrial processes.

The constant spread and evolution of agricultural pathogens provide a continually renewed source of challenges to productivity and food safety, while numerous benefits are derived from many microorganisms associated with, or introduced into, cropping systems, food, and food-related industries. Additionally, new vulnerabilities are generated for agriculture by the global movement of agricultural products, trading policies, industrial and agricultural practices, and the potential malicious release of pathogens. Science and technology emerging from microbiology research can assist in meeting these challenges paused to agriculture. Knowledge of microbial pathogens will lead to tools for surveillance and disease prevention. Beneficial microbes may find uses in agriculture as biofertilizers, phytostimulators, bioherbicides, biopesticides, bioremediators, etc. Complex interactions among microbes and agricultural systems should be better understood to facilitate the optimal use of beneficial microorganisms and maximal control of pathogens. In this programme, attempts will be made to give an in-depth knowledge pertaining to the sustainable use of microorganisms as a valuable tool in agriculture.

The programme is designed for:

- graduates who are expecting to pursue M. Phil/Ph.D. studies in a related field.
- research officers/scientists, extension officers, and educators in public and private institutions who require advanced training in agricultural microbiology.
- qualified entrepreneurs and enthusiast with an interest in the field of microbiology and agriculture.

1.1 Objectives

The main objective is to disseminate new knowledge, technologies and advances in agricultural microbiology to current and prospective agriculturists. In addition the programme intends to:

- provide a sound background in microbial processes and their applications in agriculture.
- train in culturing and preservation of microorganisms
- simulate microbial processes in the laboratory
- train in laboratory management
- encourage and lay a framework to establish organic farming systems in Sri Lanka.
- train in applying proper scientific methods and hypothesis testing to design and execute experiments necessary for innovation and problem solving.
- produce experts capable of using novel technologies in current agricultural settings to overcome challenges and enhance productivity.

1.2 Eligibility Crieteria

A Bachelor's Degree from a recognized University with Microbiology/Botany/Plant Sciences/ Biotechnology/Plant Biotechnology or Agriculture as a subject or any other equivalent qualification acceptable to the Senate of the University of Colombo.

The candidates will be selected based on academic merits, examination and/or an interview.

1.3 Course Fees

MSc. in Agricultural Microbiology (Parts I and II of the programme)

Fees – **LKR 400,000/-** (should be paid in full at the time of initial registration)

MSc. (Research) in Agricultural Microbiology

Only the students who successfully complete Parts I and II will be eligible to proceed to Part III (research project) leading to the MSc (Res.) degree programme. Students who wish to proceed to Part III should make an additional payment of **Rs. 150,000/-** (subject to change) at the time of enrolment for Part III

2. Programme Intended Learning Outcomes (PLOs)

At the end of the programme students should be able to:

- demonstrate critical awareness of fundamental concepts, theories, processes, applications and current issues/trends in the field of agricultural microbiology.
- identify and explain the diverse and vital roles of microorganisms in agriculture-based industries.
- demonstrate skills in the use of tools, technologies and methods common to microbiology and associated industries.
- apply proper scientific methods and hypothesis testing to design and conduct investigations and make accurate interpretations and conclusions.
- communicate and disseminate findings and decisions to the specialist in the field and wider community.
- evaluate, plan and execute appropriate microbe-based solutions in a methodical and creative way to deal with issues and challenges in agriculture related industries.
- demonstrate self-direction and originality in tackling and solving problems related to the field
- uphold relevant ethical standards and professional conduct at all times.

3. Programme Structure

<table>
<tr><td rowspan="17">Part 1</td><td rowspan="8">Semester I</td><td>MAM 5101</td><td rowspan="16">Postgraduate Diploma - SLQF Level 08</td><td rowspan="17">Master of Science - SLQF Level 09</td><td rowspan="18">Master of Science (Research) - SLQF Level 10</td></tr>
<tr><td>MAM 5102</td></tr>
<tr><td>MAM 5103</td></tr>
<tr><td>MAM 5104</td></tr>
<tr><td>MAM 5105</td></tr>
<tr><td>MAM 5106</td></tr>
<tr><td>MAM 5107</td></tr>
<tr><td>MAM 5108</td></tr>
<tr><td rowspan="9">Semester II</td><td>MAM 5201</td></tr>
<tr><td>MAM 5204</td></tr>
<tr><td>MAM 5206</td></tr>
<tr><td>MAM 5207</td></tr>
<tr><td>MAM 5208</td></tr>
<tr><td>MAM 5209</td></tr>
<tr><td>MAM 5211</td></tr>
<tr><td>MAM 5212</td></tr>
<tr><td>MAM 5213</td></tr>
<tr><td>Part 2</td><td>Semester III</td><td>MAM 5301</td><td></td></tr>
<tr><td>Part 3</td><td>Semester IV</td><td>MAM 5401</td><td></td><td></td></tr>
</table>

4. Programme Modules

4.1 PART I - Modules

Course Code	Course Title	No. of Hours	No. of Credits
Semester I			
MAM 5101	General Microbiology	**15 L**	**1**
MAM 5102	Plant-microbe Interactions	**15 L**	**1**
MAM 5103	Agricultural Microbiology	**30 L**	**2**
MAM 5104	Biostatistics and Experimental Design	**10 L 10 P**	**1**
MAM 5105	Phytopathogenic Microorganisms	**15 L**	**1**
MAM 5106	Practical Module I	**120 P**	**4**
MAM 5107	Seminar	**30 P**	**1**
MAM 5108	Microbial Bioinformatics	**30 P**	**1**
Semester II			
MAM 5201	Soil Microbiology	**15 L**	**1**
MAM 5204	Organic Agriculture	**15 L**	**1**
MAM 5206	Post-harvest Diseases	**15 L**	**1**
MAM 5207	Plant Disease Management	**15 L**	**1**
MAM 5208	Quality Assurance and Laboratory Management in Microbiology	**30 L**	**2**
MAM 5209	Food Microbiology	**15 L**	**1**
MAM 5211	Practical Module II	**120 P**	**4**
MAM 5212	Plant Inspection and Quarantine	**15 L**	**1**
MAM 5213	Entrepreneurship	**15 L**	**1**
		Total Credits	**25**

***Part I: Postgraduate Diploma (SLQF L8) /Total credits - 25**

4.2 PART II - Module

Course Code	Course Title	No. of Hours	No. of Credits
Semester III			
MAM 5301	Directed Study (Guided Mini Research Project/Case Study)	**150 P**	**5**

***Part I + Part II: Master of Science (SLQF L9) /Total credits - 30**

4.3 PART II - Module

Course Code	Course Title	Duration	No. of Credits
Semester IV			
MAM 5401	Research Project	**12 months**	**30**

***Part I + Part II + Part III: Master of Science (Research) (SLQF L10) /Total credits – 60**

5. Mode of Delivery & Other Important Details

5.1 Lectures

The lectures are conducted in blended mode. Onsite lectures and online via Zoom Platform. The Zoom links for lectures will be provided to the students.

5.2 Practicals

Practical sessions will include both laboratory work and field visits.

5.3 Learning Management System (LMS)

URL:https://sci.cmb.ac.lk/lms/

All the students get access to the MSc LMS. The students are enrolled to the relevant courses in the LMS each semester.

All the lecture materials and practical handouts are uploaded to the LMS.

5.4 Student Information System (SIS)

URI: https://sims.cmb.ac.lk/sci/login

5.5 Registration for the Course Units

Students can register for courses through the SIS.

5.6 Registration for the Examination

Exam registration is available in the MSc SIS.

Students will be able to register/ cancel the exam courses until the deadline has expired. Students can view the details until the exam event is closed by the coordinator.

5.5 Provisional Results

Students will be able to see their results (Grade only) in the MSc SIS when the coordinator releases the provisional result for the courses.

The system generates auto-emails to registered students when releasing results for the courses.

5.6 Final Result

Students will be able to see their results (Grade) with GPA in the MSc SIS when the Exam branch releases the final result and enables the GPA.

For more information

Please contact through the email <itsc@sci.cmb.ac.lk>, if you have an issue with logging into the LMS Please contact your MSc Coordinator, Faculty of Science, If you have an issue in exam registrations, provisional results or your details are wrong in the system.

5.7 Course Duration

- The duration of Parts I and II of the Master of Science programme is 24 months. The duration of Part III is of a further 12 months.
- The maximum period allowed to complete the degree is five (05) years from the date of first registration.
- Students who fail to complete Part I and Part II within 3 years from the first registration will not be allowed to register for Part III.

5.8 Date of Registration

A person who has been selected as a postgraduate student shall be required to register for the current academic year to follow the particular MSc programme. The date of registration shall be specified by the Faculty.

5.9 Maintenance of Registration

Registration should be maintained in order to obtain the MSc degree by paying the specified fees. If a student continue the MSc more than the specified period a payment in addition to the total course fee will be charged to maintain the registration.

5.10 Postponement of Registration

A student who desires to postpone his/her registration should do so in writing to the Dean, Faculty of Science, giving reasons for and duration of postponement. Each such request shall be considered by the faculty on the recommendation by the Higher Degrees Committee (HDC) and the relevant Department.

5.11 Cancellation of Registration

A registration may be canceled by the faculty on the recommendation by the HDC and the relevant Department inadequate progress, for academic violation of rules and regulations of the University, failure to pay prescribed fees by the due dates, or any other reasons as decided by the Faculty.

5.12 Leave or absence

Leave of absence may be granted on medical grounds or any other valid reasons acceptable to the Faculty.

5.13 Examinations

The end semester final examinations are conducted at the university premises. The students are required to do the examination registration via Student Information System (SIS) as explained above. The minimum grade a student should achieve to pass a paper/mini project/research component is B-.

5.14 Repeat Examinations

If a candidate fails (Grade below B-), he/she shall repeat the entire examination or the required part at the next first available opportunity. Candidates are allowed to repeat an examination paper only twice.

5.15 Scheme of Evaluation

The Grade Point Average (GPA) shall be computed using grades assigned for all papers in Part I and for Part II. The minimum grade a student should achieve to pass a paper/mini project/research component is B-.

Grade Points The Grade Points will be assigned using the following table.

Marks Range	Grade	Grade Point
85– 100	A+	4.00
70 - 84	A	4.00
65 - 69	A-	3.70
60– 64	B+	3.30
55– 59	B	3.00
50 - 54	B-	2.70
45 - 49	C+	2.30
40 - 44	C	2.00
35 - 39	C-	1.70
30 - 34	D+	1.00
25 - 29	D	1.00
00 - 24	E	0.00

5.16 GPA Calculation

If the Grade Point Average (GPA) of a student is required for any purpose, it shall be calculated using the following equation:

$$GPA = \sum w_i g_i / \sum w_i$$

Where, w_i = number of credit units for the i^{th} and g_i = grade points for the courses

The GPA is rounded to the second decimal place.

Any student who has not appeared for the evaluation of a course may be assigned a GPA of 0.00 Value for such for the purpose of calculating his/her GPA

5.17 Award of Degree of Master of Science

A student who obtains a GPA of 3.00 or above for Part II may be eligible for the award of the Degree of Master of Science, provided the student fulfills other requirements as prescribed. No student shall be entitled to the award of the Degree of Master of Science unless he/she has satisfied all the prescribed requirements and he/she has supplicated for the award of the Masters Degree at the relevant Convocation of the University of Colombo.

5.18 Award of Postgraduate Diploma

Students who obtain a GPA of 2.70 or above for Part I may be eligible for the award of the Postgraduate Diploma, where applicable, and upon request, provided the student fulfills other requirements as prescribed.

5.19 Merit List

A student shall be eligible for the award of a Merit Pass in the MSc programme if:

The student successfully completed Part I and Part II within the minimum stipulated time period related to initial registration date and intake.

AND

The student obtains an overall GPA of 3.30 or above (B+ Grade) for Parts I and Part II taken together.

AND

the student has not repeated any course unit.

AND

The student obtains a minimum GPV of 2.70 (B- Grade) in all courses followed in the programme.

5.20 Student Services (Library Facilities, Student Affair Divisions)

The Science Library is available for physical as well as virtual access and the library is open every weekday except for holidays.

Please visit https://science.cmb.ac.lk/ for further information including membership registration, e-resources, and other facilities issued by the library.

6. Curriculum

<table>
<tr><td>Course Code / Title</td><td colspan="4">MAM 5101 / General Microbiology</td></tr>
<tr><td>Credit Value</td><td colspan="4">1</td></tr>
<tr><td>Prerequisites</td><td colspan="4">None</td></tr>
<tr><td rowspan="2">Details</td><td>Lectures hours</td><td>Practical hours</td><td>Independent Learning hours</td><td>Notional hours</td></tr>
<tr><td>15</td><td>-</td><td>35</td><td>50</td></tr>
<tr><td>Rationale</td><td colspan="4">This course intends to introduce fundamentals related to microbes including origin, diversity, nutrition, energetics, catabolism and growth, enabling students to grasp the basic principles and techniques in Microbiology.</td></tr>
<tr><td>Intended Learning Outcomes</td><td colspan="4">By the end of this course the students will be able to,
• recognize basic cellular structures of microbes
• explain the diversity of microorganisms and phylogeny
• select appropriate enumeration and culturing techniques for a given situation
• understand microbial nutrition and energetics
• analyse factors affecting microbial growth</td></tr>
<tr><td>Course Content</td><td colspan="4">Microbial world: Microscopy, Origins of microbiology; Microbial cell structure and function; Microbial systematics: Evolution, Phylogeny; Microbial diversity: Bacteria, Archaea, Eukarya, Viruses; Microbial Nutrition: Nutritional types, Uptake of nutrients; Energetics & redox reactions :Energy classes, Enzymes, Electron donors and acceptors, Fermentation, Respiration; Microbial growth: Cell division, Population growth, Environmental effects on growth, Microbial growth control; Enumeration & culturing techniques.</td></tr>
<tr><td>Method/s of Evaluation:</td><td colspan="4">Semester end theory examination (70%) and assignments (30%)</td></tr>
<tr><td>References</td><td colspan="4">• Madigan, M. T., Bender, K. S., Buckley, D. H., Sattley, W. M. & Stahl, D. A. (2019)
• Brock Biology of Microorganisms, 15th Edition, Pearson Education Limited</td></tr>
</table>

Course Code / Title	**MAM 5102 / Plant-microbe Interactions**			
Credit Value	1			
Prerequisites	None			
Details	Lectures hours	Practical hours	Independent Learning hours	Notional hours
	15	-	35	50
Rationale	This course will enhance the knowledge of students on different plant-microbe interactions and how those interactions can be used to increase yield and productivity while maintaining sustainability in agriculture.			
Intended Learning Outcomes	By the end of this course the students will be able to, • identify different types of interactions among plants and microbes • distinguish the beneficial and detrimental effects of plant-microbe interactions • explain the molecular basis of plant-microbe interactions • apply the knowledge gained on plant-microbe interactions to improve crop yield and productivity			
Course Content	Plant microbiome: Composition, Dynamics; Symbiosis: Mutualism, Commensalism, Parasitism; Biofilms; Quorum sensing; Rhizosphere; Phyllosphere; Spermosphere; Mycorrhizae: Ectomycorrhizae, Endomycorrhizae; Nitrogen fixing microbes: Legume-root nodule symbiosis, Stem nodulating Rhizobia, Non Legume N_2 fixing symbiosis; Symbiotic associations with cyanobacteria; Bacteria supporting plant growth: Production of hormones, Plant growth promoting rhizobacteria (PGPR); Stress tolerance; Endophytes; Molecular microbe-host interactions; Tailored microbiome for sustainable agriculture			
Method/s of Evaluation:	Semester end theory examination (70%) and assignments (30%)			
References	• Lugtenberg, B. (Eds), (2015). *Principles of Plant-Microbe Interactions, Microbes for Sustainable Agriculture*, Springer International Publishing, Switzerland.			

<table>
<tr><td>Course Code / Title</td><td colspan="4">MAM 5103 / Agricultural Biotechnology</td></tr>
<tr><td>Credit Value</td><td colspan="4">2</td></tr>
<tr><td>Prerequisites</td><td colspan="4">None</td></tr>
<tr><td rowspan="2">Details</td><td>Lectures hours</td><td>Practical hours</td><td>Independent Learning hours</td><td>Notional hours</td></tr>
<tr><td>30</td><td>------</td><td>70</td><td>100</td></tr>
<tr><td>Rationale</td><td colspan="4">This course provides a deep understanding on the use of microbes in agriculture and related industries to mitigate problems and enhance productivity in a sustainable and environmentally friendly manner.</td></tr>
<tr><td>Intended Learning Outcomes</td><td colspan="4">By the end of this course the students will be able to,
demonstrate an understanding on different microbes and their applications in agriculture related industries
show competence in the use of various laboratory techniques used to identify and develop microbes/microbial products for agriculture related industries
assess and identify suitable microbe/microbes based products/solutions for applications in agriculture related industries
apply the knowledge and skills gained to mitigate problems and enhance productivity in agriculture related industries.</td></tr>
<tr><td>Course Content</td><td colspan="4">Microbes to enhance plant growth: development of bio-fertilizers and growth enhancers; Microbes to manage biotic and abiotic stress: Biological control of diseases, enhancement of plant disease resistance, salt and drought tolerance, development of biocontrol agents; Bioremediation: Use of microbes to restore degraded/polluted agricultural soils; Development of genetically engineered microbes for agricultural biotechnology; Soil quality monitoring; Microbes to manage post-harvest crop residues; Molecular techniques for biotechnological applications of microbes: Plant and microbe transformation technologies, methods and, microbial genes for important agronomic traits, biomarkers, fluorescent tagging of microbes; Principles and techniques of plant cell and tissue culture.</td></tr>
<tr><td>Method/s of Evaluation:</td><td colspan="4">Semester end theory examination (70%) and assignments (30%)</td></tr>
<tr><td>References</td><td colspan="4">Plant Physiology. Taiz L. and Zeiger E. (1991)
Biotechnology in Agriculture. Bajaj Series (Vol 1- 20) 1990-1999
Plant Biotechnology and Agriculture -Prospects for the 21st Century. Arie Altman and Paul Hasegawa (2011)
Advances in Plant Microbiome and Sustainable Agriculture. Yadav, A.N., Rastegari, A.A., Yadav, N. and Kour, D., 2020. Springer Singapore.</td></tr>
</table>

<table>
<tr><td>Course Code / Title</td><td colspan="4">MAM 5104/ Biostatistics and Experimental Design</td></tr>
<tr><td>Credit Value</td><td colspan="4">1</td></tr>
<tr><td>Prerequisites</td><td colspan="4">None</td></tr>
<tr><td rowspan="2">Details</td><td>Lectures hours</td><td>Practical hours</td><td>Independent Learning hours</td><td>Notional hours</td></tr>
<tr><td>10</td><td>10</td><td>30</td><td>50</td></tr>
<tr><td>Rationale</td><td colspan="4">This course provides essential practical skills to design biological experiments and analyze biological data using statistical methods and tools</td></tr>
<tr><td>Intended Learning Outcomes</td><td colspan="4">At the end of the course you should be able to,
explain the basic concepts on variables, statistical variation, experimental designs, statistical inference, and hypothesis testing.
identify suitable experimental designs and relationships between variables.
use suitable data analysis methods to critically analyze data and make correct statistical inferences.
formulate biological hypotheses and design experiments to test the hypotheses
employ statistical software and programming languages (R) for biological data analysis.</td></tr>
<tr><td>Course Content</td><td colspan="4">Introduction to statistics; Description of data; Probability; Sampling distributions: random sampling, central limit theorem and sampling distributions for sample means; Confidence intervals for population mean and variance; Statistical inferences: point estimations, hypothesis testing; Inferences involving one population; Inferences involving two populations using independent and paired samples. Experiments and errors; Variables, interactions, treatments and treatment effects, Experimental Designs; Treatment arrangements; Correlation & Regression..
Practical content: Introduction to R, performing basic statistical tests using R</td></tr>
<tr><td>Method/s of Evaluation:</td><td colspan="4">End semester theory examination (70%) and continuous assessment and/or assignments (30%)</td></tr>
<tr><td>References</td><td colspan="4">Jim Fowler, Lou Cohen, Phil Jarvis (1998). Practical Statistics for Field Biology, 2nd Edition, John Wiley & Sons Inc
Chap T. Le, Lynn E. Eberly (2016). Introductory Biostatistics (2nd Edition), John Wiley & Sons.</td></tr>
</table>

Course Code / Title	**MAM 5105 / Phytopathogenic Microorganisms**			
Credit Value	1			
Prerequisites	None			
Details	Lectures hours	Practical hours	Independent Learning hours	Notional hours
	15	----	35	50
Rationale	This course encompasses fundamental principles of plant pathology, phytopathogenic microorganisms and related laboratory techniques to provide students with knowledge and skills necessary to identify phytopathogenic microorganisms and assess their impact on important crops.			
Intended Learning Outcomes	By the end of this course the students will be able to, • demonstrate an understanding on basic concepts of plant pathology • identify microbes that cause plant diseases and the types of symptoms they cause. • assess environmental, biological, genetic and cultural factors influencing plant disease development • apply suitable isolation and identification methods for accurate diagnosis of plant diseases.			
Course Content	Introduction: Concept of disease, symptoms and types of diseases; Causative microbial agents of plant diseases: Fungi, bacteria, mollicutes, viruses and viroids; Disease development: Parasitism and pathogenicity, disease triangle, disease cycle / infection cycle; How pathogens attack plants: Mechanical forces, microbial enzymes and toxins, growth regulators, effect on physiology of host; Genetics of plant diseases: Genes and diseases, plant disease resistance and development of resistant varieties; Plant disease diagnosis and techniques in isolation and identification of microbial pathogens; Brief overview of diseases of economically important crop plants.			
Method/s of Evaluation:	Semester end theory examination (70%) and assignments (30%)			
References	• Plant Pathology. Agrios, G. N. (1997 and 2005). Academic Press. • Plant Pathology and Plant Diseases. Tronsmo, A.M., Collinge, D.B., Djurle, A., Munk, L., Yuen, J. and Tronsmo, A., 2020. CABI • Molecular plant pathology. Dickinson, M., 2003.. Garland Science. • Essential plant pathology. Schumann, G.L. and D'Arcy, C.J., 2006. American Phytopathological Society (APS Press).			

Course Code / Title	**MAM 5106 / Practical Module I (120P; 4C)**			
Credit Value	4			
Prerequisites	None			
Details	Lectures hours	Practical hours	Independent Learning hours	Notional hours
		120	80	200
Rationale	This course intends to provide a sound practical knowledge on courses conducted in Semester I: MAM 5101 (General Microbiology), MAM 5102 (Plant Microbe Interactions), MAM 5103 (Agricultural Biotechnology), and MAM 5105 (Phytopathogenic Microorganisms).			
Intended Learning Outcomes	After completion of this course the students will be able to: • identify main groups of microorganisms based on micromorphology • demonstrate techniques used in microbiology: culturing, enumeration, and sterilization • employ molecular techniques for plant disease diagnosis • compare and contrast different components of the plant microbiome • identify disease symptoms and causative organisms & correlate those with diseases.			
Course Content	**MAM 5101 General Microbiology** – General characteristics of bacteria and fungi, culturing microorganisms, sterilization techniques, methods of identification and quantification. **MAM 5102 Plant Microbe Interactions** – Observing plant microbial associations such as rhizosphere, root nodules, phyllosphere and mycorrhizae. **MAM 5103 Agricultural Biotechnology** – DNA extraction, gel electrophoresis, PCR, Plant cell and tissue culture, transformation of plants and microbes, screening of microorganisms for biocontrol, bioremediation and plant growth enhancement properties. **MAM 5105 Phytopathogenic Microorganisms**- Identifying disease symptoms and diseases, isolation and identification of causative organisms, disease diagnosis, molecular technique for plant disease diagnosis, molecular and genetic basis of plant disease resistance.			
Method/s of Evaluation:	Semester end practical assessment (70%) and assignments (30%)			
References	• Tortora, G. J., Funke, B. R. & Case, C. L. (2013). *Microbiology: An Introduction*, 11th Edition, Pearson Education, Inc. • Plant Pathology. Agrios, G. N. (1997 and 2005). Academic Press. • Molecular plant pathology. Dickinson, M., 2003.. Garland Science.			

Course Code / Title	**MAM 5107 / Seminar**			
Credit Value	1			
Prerequisites	None			
Details	Lectures hours	Practical hours	Independent Learning hours	Notional hours
	-	30	20	50
Rationale	This course aims to provide students with scientific communication skills.			
Intended Learning Outcomes	At the end of this course the students will be able to; ● demonstrate understanding of a given current topic ● make an effective presentation of the topic provided ● demonstrate the ability to participate in an academic/ formal discussion			
Course Content	Students are expected to present a seminar on a given topic relevant to agricultural microbiology and face a *viva-voce* examination.			
Method/s of Evaluation:	Seminar presentation (60%) and viva-voce examination (40%)			
References	● Recent scholarly articles relevant to the topic provided.			

Course Code / Title	**MAM 5108 / Microbial Bioinformatics**			
Credit Value	1			
Prerequisites	None			
Details	Lectures hours	Practical hours	Independent Learning hours	Notional hours
	-	30	20	50
Rationale	This course intends to provide students a basic introduction to bioinformatics and its applications in studying microbiomes by introducing key concepts in bioinformatics and expanding to metagenomic concepts.			
Intended Learning Outcomes	At the end of the course the students should be able to: • demonstrate knowledge on basic bioinformatics concepts, databases, pipelines, and tools. • discuss applications in bioinformatics related to microbiomes. • use bioinformatics databases to retrieve data and analyze them using bioinformatics tools and software. • evaluate metagenomic data pipelines and perform a basic metagenomic analysis.			
Course Content	The central dogma of molecular biology: genetic code, transcription, translation; Introduction to Bioinformatics, Bioinformatics applications: general applications, metagenomic applications; Biological sequences: DNA, RNA, amino acid sequences; Sequence Databases: GenBank, EMBL, UniprotKB; Sequence analysis; Sequence formats: FASTA, GenBank, FASTAQ; Sequence analysis tools: MEGA; Sequence alignment: pairwise alignment, BLAST, Multiple sequence alignment; Protein structure databases, Protein structure visualization and analysis, Next generation sequencing techniques; Introduction to metagenomics; Metagenomic databases: microbial genome databases, 16S rRNA gene sequence databases; Metagenomic data pipelines; Metagenomic tools: QIIME2, Phyloseq; Phylogenetic analysis: Introduction, Visualization and analysis tools: Mega, FigTree.			
Method/s of Evaluation:	End semester practical examination (70%) and assignments (30%)			
References	• Introduction to Bioinformatics; 5th Edition (Arthur Lesk) 2019. • Introduction to Bioinformatics: A Theoretical and Practical Approach (Krawetz, S. A. and Womble, D.D.) 2003 • Metagenomics: Methods and Protocols; 2nd edition (Wolfgang R. Streit and Rolf Daniel) 2017. • Relevant recent research papers and internet tutorials and guides about bioinformatics pipelines.			

Course Code / Title	**MAM 5105/ Post-harvest Technology**			
Credit Value	1			
Prerequisites	None			
Details	Lectures hours	Practical hours	Independent Learning hours	Notional hours
	15	-	35	50
Rationale	This course will provide an understanding of physical, physiological, and pathological factors that contribute to post harvest deterioration of horticultural products. Methods that are used to reduce post harvest losses of produce will be discussed in detail.			
Intended Learning Outcomes	By the end of this course the students will be able to • assess different physical, physiological, biochemical, and pathological factors related to quality deterioration and wastage of horticultural produce after harvest • examine commercial aspects (distribution, marketing, food safety standards) related to post harvest handling • analyze and implement appropriate strategies to minimize post-harvest losses and maintain post- harvest quality of horticultural commodities			
Course Content	Introduction to post harvest technology; Biological aspects: respiration, transpiration and water loss, ethylene production of commodities etc.; Morphological, anatomical and physiological basis of post-harvest technology; Physiological disorders; Post harvest diseases: types and sources of infection, factors affecting disease development; Maturity indices: Preparation/treatment of produce; Packing house preparation; Packaging and transport of produce; Refrigerated storage; controlled and modified atmosphere; Emerging concepts and practices.			
Method/s of Evaluation:	End of semester theory (70%) and assignments (30%).			
References	• Dris, R., Niskanen, R. and Jain, M. (2001). Crop Management and Post-harvest Handling of Horticultural Products: Quality Management, Science Publishers • Shewfelt, R.L and Prussia, S.E. (1992). Post Harvest Handling (1st Edition) Academic Press. • Agrios, G.N. (1997 and 2005). Plant Pathology, Academic Press • Bautista, O.K. (1990). Post Harvest Technology for SE Asia Perishable Crops, • Technical Learning Research Center, Manila, Philippines			

<table>
<tr><td>Course Code / Title</td><td colspan="4">MAM 5209 Food Microbiology</td></tr>
<tr><td>Credit Value</td><td colspan="4">1</td></tr>
<tr><td>Prerequisites</td><td colspan="4">None</td></tr>
<tr><td rowspan="2">Details</td><td>Lectures hours</td><td>Practical hours</td><td>Independent Learning hours</td><td>Notional hours</td></tr>
<tr><td>15</td><td></td><td>35</td><td>50</td></tr>
<tr><td>Rationale</td><td colspan="4">This course is intended to give a comprehensive knowledge on microbiological applications in food and beverage production, food spoilage and prevention of spoilage.</td></tr>
<tr><td>Intended Learning Outcomes</td><td colspan="4">At the end of this course, the students will be able to,
discuss the association of microorganisms and environment in food spoilage
suggest food preservation methods based on food type and other contributory factors
identify suitable methods to detect and quantify food-borne microorganisms.</td></tr>
<tr><td>Course Content</td><td colspan="4">Types of food and their microbial communities; Factors affecting food spoilage: Extrinsic and extrinsic factors; Techniques of food preservation: use of temperature, irradiation, drying, additives: Fermented food: Dairy products, fermented vegetables, beverages;, food-borne diseases and food intoxication; Methods of detecting food-borne microorganisms: culture dependent and culture independent techniques.</td></tr>
<tr><td>Method/s of Evaluation:</td><td colspan="4">Semester end theory examination (70%) and assignments (30%)</td></tr>
<tr><td>References</td><td colspan="4">Jay, J.M. (1992) Modern Food Microbiology , 4th Edition
Da Silva, N., Okazaki, M.M., Gomes, R.A.R., Junqueira, V.C.A., Taniwak, M.H., Silveira, N. (2018). Microbiological Examination Methods for Food and Water, a Laboratory Manual 1st Edition.
Da Costa, M.S., Duarte, J.C. (Eds)(1989). Microbiology in Agriculture, Fisheries and Food</td></tr>
</table>

Course Code / Title	**MAM 5201 / Soil Microbiology**			
Credit Value	1			
Prerequisites	None			
Details	Lectures hours	Practical hours	Independent Learning hours	Notional hours
	15	-	35	50
Rationale	This course module intends to expand the knowledge of students on soil microbial communities and their involvement in various soil processes in maintaining the productivity of soil.			
Intended Learning Outcomes	By the end of this course the students will be able to, • describe the diversity of microbes in soil • discuss biochemical and molecular techniques in soil microbiology • recognize the role of microbes in various soil processes and nutrient cycling • appraise the importance of soil microbes to maintain soil fertility and productivity			
Course Content	Soil formation and microbial community; Physiological and biochemical methods to study soil biota and their functions; Molecular methods for studying soil ecology; Role of microbial communities in the formation and decomposition of soil organic matter, Biogeochemical cycles: C, N, P & S cycles, Significance for ecosystem sustenance; Management of organisms and their processes in soil			
Method/s of Evaluation:	Semester end theory examination (70%) and assignments (30%)			
References	• Tate, R.L. (2000). *Soil Microbiology*, 2nd Edition, Wiley-Blackwell.			

Course Code / Title	**MAM 5207 / Plant Disease Management**			
Credit Value	1			
Prerequisites	None			
Details	Lectures hours	Practical hours	Independent Learning hours	Notional hours
	15	----	35	50
Rationale	The course primarily deals with the underlying concepts and strategies of plant disease management with a focus on plant disease epidemiology and influence of the environment. The course will provide knowledge and skills to design and implement suitable management strategies to mitigate plant diseases in a sustainable and environmentally friendly manner.			
Intended Learning Outcomes	By the end of this course the students will be able to, • demonstrate an understanding of concepts of plant disease epidemiology and disease management. • assess environmental, biological, genetic and cultural factors influencing plant disease development • appraise different strategies available to manage or control plant diseases, and design appropriate disease management strategies.			
Course Content	Environment and plant disease epidemiology: Effect of temperature, moisture, wind, light, soil pH and structure, nutrition, herbicides, disease epidemiology, elements of an epidemic, development; Methods of plant disease management: Exclusion, eradication, immunization and developing resistance, direct protection; Integrated disease management; Legislations; Emerging concepts			
Method/s of Evaluation:	End of semester theory examination (70%) and assignments (30%).			
References	• Plant Pathology by G.N. Agrios (1997) and (2005). • Biotechnology And Plant Pathology: Current Trends by Vicente Vives Rosa M. Pérez-Clemente (2016) • Biotechnology And Plant Pathology by Sarfaraz Ahmad (2017) • Plant Pathology And Biotechnology Sheetal Singh (2014)			

<table>
<tr><td>Course Code / Title</td><td colspan="4">MAM 5204 / Organic Agriculture</td></tr>
<tr><td>Credit Value</td><td colspan="4">1</td></tr>
<tr><td>Prerequisites</td><td colspan="4">None</td></tr>
<tr><td rowspan="2">Details</td><td>Lectures hours</td><td>Practical hours</td><td>Independent Learning hours</td><td>Notional hours</td></tr>
<tr><td>15</td><td>-</td><td>35</td><td>50</td></tr>
<tr><td>Rationale</td><td colspan="4">This course provides the opportunity to the participant to learn the importance, methods used and the challenges faced in organic agriculture. The course also provides an insight to the importance of microbes, their associations and their contribution to maintain healthy soils for sustainable organic farming.</td></tr>
<tr><td>Intended Learning Outcomes</td><td colspan="4">After successful completion of the module, the participant should be able to:
describe the importance of organic farming practices for a sustainable future and the challenges faced
analyse and evaluate the methods used in organic farming practices and their feasibility
evaluate the importance of healthy soils and the contribution of soil microbiota in maintaining healthy soils</td></tr>
<tr><td>Course Content</td><td colspan="4">Importance of conventional agricultural methods and the challenges faced: current trends, inorganic fertilizers, synthetic pesticides and insecticides their importance and associated problems; Organic Agriculture: definition, concept and intentions; Different cropping systems used in organic farming; Sources of nutrient for organic agriculture: composting, compost preparation, Bio fertilizers their importance and preparation, animal waste, green manure; Soil productivity and soil health: Definitions, improvement and importance in organic farming; Pest management in organic agriculture: Basics, use of natural enemies, commercial preparations of natural pesticides, prevention of entering of pests - advantages and disadvantages; Weed management: Allelopathic crops, mulching, flame burning etc.; Quality control and certification procedures of organic products for crops and livestock; Economic viability; Emerging concepts and technologies.</td></tr>
<tr><td>Method/s of Evaluation:</td><td colspan="4">End of semester theory examination (70%) and assignments (30%).</td></tr>
<tr><td>References</td><td colspan="4">Geoff Hamilton, Organic Gardening
T. D Cobb, The Gardener's A-Z Guide to Growing Organic Food
P. A Wheeler, R.B Ward, The Non-Toxic Farming Handbook, Acres USA
Lampkin, N. (1990) Organic Farming, Farming press books, Opswich 701 p</td></tr>
</table>

Course Code / Title	**MAM 5208 / Quality Assurance and Laboratory Management in Microbiology**			
Credit Value	2			
Prerequisites	None			
Details	Lectures hours	Practical hours	Independent Learning hours	Notional hours
	30		70	100
Rationale	This course intends to educate the students on risks associated with microorganisms and ways of minimizing/preventing microbiological hazards. At the same time, the factors to be addressed in good laboratory management will be introduced to the students.			
Intended Learning Outcomes	At the end of this course the students will be able to: ● identify and assess the risks originating from microorganisms and other laboratory practices ● design a microbiology laboratory based on the risks identified ● develop documents pertaining to laboratory activities ● identify non-conforming practices of each laboratory component and suggest corrective actions.			
Course Content	General guidelines: Biological risks, hazard categories; Designing a laboratory to minimize risks; Quality assurance in microbiology: Confidentiality and impartiality, laboratory personnel, maintenance of laboratory equipments, laboratory house-keeping, media checks, reference material maintenance, documentation, test methods and method validation, measurement uncertainty; non-conformities; Laboratory accreditation.			
Method/s of Evaluation:	End of semester theory examination (50%), continuous assessments (30) and assignments (20%).			
References	● ISO/IEC 17025: 2017 General requirements for the competence of testing and calibration laboratories ● World Health Organization. Laboratory Biosafety Manual. – 3rd Edition			

<table>
<tr><td>Course Code / Title</td><td colspan="4">MAM 5212 / Plant inspection and quarantine</td></tr>
<tr><td>Credit Value</td><td colspan="4">1</td></tr>
<tr><td>Prerequisites</td><td colspan="4">None</td></tr>
<tr><td rowspan="2">Details</td><td>Lectures hours</td><td>Practical hours</td><td>Independent Learning hours</td><td>Notional hours</td></tr>
<tr><td>15</td><td>----</td><td>35</td><td>50</td></tr>
<tr><td>Rationale</td><td colspan="4">Plant quarantine is a vital aspect of plant disease management and prevention of dissemination. Therefore this course intends to teach the importance of plant inspection and quarantine practices while providing a sound knowledge on basic principles, techniques and agreements and legislations pertaining to the field.</td></tr>
<tr><td>Intended Learning Outcomes</td><td colspan="4">By the end of this course the students will be able to,
demonstrate an understanding of the principles of plant quarantine and associated techniques, agreements and legislations.
assess the risks of pests and pathogens
implement relevant legislation, regulations and agreements as appropriate
apply correct phytosanitary strategies when required</td></tr>
<tr><td>Course Content</td><td colspan="4">Biotic factors involved in plant health: insects, arachnids, nematodes, molluscs, weeds, fungi, bacteria, viruses, quarantine pests and regulated non-quarantine pests. Living modified organisms (LMO), origin and modes of introduction and transmission within and between countries, impact of pests on commercial production, the environment and human health; Pest risk analysis : components of risk assessment and risk management; Detection and identification techniques; International agreements and standards; Legislation, regulations and national policies; Phytosanitary principles: prevention, eradication, control/containment as related to international trade; Phytosanitary certification.</td></tr>
<tr><td>Method/s of Evaluation:</td><td colspan="4">End of semester theory examination (70%) and assignments (30%).</td></tr>
<tr><td>References</td><td colspan="4">Principles of plant health and quarantine. Ebbels, D.L., 2003. CABI.
Principles and practices of plant quarantine (Vol. 1). Muthaiyan, M.C., 2009. Allied Publishers.</td></tr>
</table>

<table>
<tr><td>Course Code / Title</td><td colspan="4">MAM 5213 / Entrepreneurship</td></tr>
<tr><td>Credit Value</td><td colspan="4">1</td></tr>
<tr><td>Prerequisites</td><td colspan="4">None</td></tr>
<tr><td rowspan="2">Details</td><td>Lectures hours</td><td>Practical hours</td><td>Independent Learning hours</td><td>Notional hours</td></tr>
<tr><td>15</td><td>-</td><td>35</td><td>50</td></tr>
<tr><td>Rationale</td><td colspan="4">This course will teach the student the basic theories and concepts of entrepreneurship. The importance of entrepreneurship, the risks, challenges, opportunities and skills that one should possess to become a successful entrepreneur will also be emphasized.</td></tr>
<tr><td>Intended Learning Outcomes</td><td colspan="4">At the end of this course, the student should be able to:
demonstrate concepts, theories and basic knowledge on entrepreneurship
evaluate and analyse the opportunities and associated risks in turning an idea into a functional business
develop a business proposal</td></tr>
<tr><td>Course Content</td><td colspan="4">Introduction to entrepreneurship: definitions, concept, importance to the individual, the society and the country; Turning an idea into a functional entreprise: Identify the gaps/problems in the market, evaluate the solutions and the opportunities available at individual, group and organizational levels, SWOT analysis; Basics of finance, marketing, management, operations, strategy, leadership and law; Entrepreneurial mindset, Evolution of entrepreneurship in today's economy; The successful entrepreneur: Key traits, interpersonal skills; Detailed analysis of a successful agricultural enterprise.</td></tr>
<tr><td>Method/s of Evaluation:</td><td colspan="4">End of semester examination (50%), and Assessment/Assignment (50%) focusing on development and presentation of a business plan and related activities.</td></tr>
<tr><td>References</td><td colspan="4">Byrd Megginso (1993). Small Business Management: An Entrepreneur's Guidebook. McGraw-Hill, Irwin
Carter Sara (2012) Enterprise and Small business. Pearson UK
Hisrich, R.D., Peters, M.P., and Shepherd, D. (2013) Entrepreneurship, McGraw-Hill Irwin, Boston</td></tr>
</table>

<table>
<tr><td>Course Code / Title</td><td colspan="4">MAM 5211/ Practical Module II</td></tr>
<tr><td>Credit Value</td><td colspan="4">4</td></tr>
<tr><td>Prerequisites</td><td colspan="4">None</td></tr>
<tr><td rowspan="2">Details</td><td>Lectures hours</td><td>Practical hours</td><td>Independent Learning hours</td><td>Notional hours</td></tr>
<tr><td></td><td>120</td><td>80</td><td>200</td></tr>
<tr><td>Rationale</td><td colspan="4">This course intends to give hands on experience on practical aspects of the courses MAM 5201 (Soil Microbiology), MAM 5206 (Postharvest Technology), MAM 5207 (Plant Disease Management), MAM 5209 (Food Microbiology) and MAM 5204 (Organic Agriculture) are included in this module.</td></tr>
<tr><td>Intended Learning Outcomes</td><td colspan="4">By the end of this course the students will be able to,
demonstrate techniques used for observing and quantifying soil microorganisms
design and apply suitable techniques for accurate plant disease diagnosis and integrative approaches for disease management.
identify organisms of quarantine importance and apply correct phytosanitary strategies while adhering to relevant legislation, regulations and agreements</td></tr>
<tr><td>Course Content</td><td colspan="4">MAM 5201 Soil Microbiology: observing and quantifying soil microorganisms, selective isolation of beneficial microorganisms
MAM 5206 Postharvest Technology: All the aspects and technologies related to Post harvest quality maintenance and handling of crops.
MAM 5207 Plant Disease Management : assessing the impact of environmental, biological, genetic and cultural factors on plant disease development and testing different strategies available to manage or control plant diseases.
MAM 5209 Food Microbiology: Detection and enumeration of food-borne microorganisms using ISO methods.
MAM 5212 Plant inspection and quarantine: Detection and identification of diseases, weeds and pests of quarantine importance, field visits.
MAM 5204 Organic Agriculture: Emphasis will be given to internationally accepted organic agricultural practices as well as traditional farming practices.</td></tr>
<tr><td>Method/s of Evaluation:</td><td colspan="4">End of semester practical assessment (70%) and assignments (30%)</td></tr>
<tr><td>References</td><td colspan="4">Da Silva, N., Okazaki, M.M., Gomes, R.A.R., Junqueira, V.C.A., Taniwak, M.H., Silveira, N. (2018) 1st Edition (Available online via Science Library)
Weaver, R.W [Editor](1994). Methods of soil analysis part 2. Microbiological and biochemical properties.</td></tr>
</table>

Course Code / Title	**MAM 5301 / Directed Study (guided mini research project/case study)**			
Credit Value	5			
Prerequisites	None			
Details	Lectures hours	Practical hours	Independent Learning hours	Notional hours
		150	100	250
Rationale	This course module provides an opportunity for students to apply the knowledge and skills they have gained so far to answer a research question or conduct a case study to broaden their knowledge, and improve research, analytical and scientific communication skills.			
Intended Learning Outcomes	At the end of this course the students will be able to; • formulate research problems/hypotheses and design appropriate research methodologies to test/solve research problems/hypotheses • collect, analyse and comprehend data to attain logical conclusions • present findings and synthesize a project report • argue and defend the findings/conclusions • demonstrate an improvement in individual work habits and interpersonal skills			
Course Content	Each student will be required to carry out a directed study (guided mini research project or case study) on a specific topic given, under the supervision of an academic staff member and submit a dissertation.			
Method/s of Evaluation:	Evaluation will be based on the dissertation presented (65%) seminar presentation (15%) viva-voce examination (20%)			
References	• Recent scholarly articles relevant to the research topic • Locharoenrat, K. (2017). Research Methodologies for beginners (Available online from Science Library)			

Course Code / Title	**MAM 5401 / Research Project**			
Credit Value	30			
Prerequisites				
Details	Lectures hours	Practical hours	Independent Learning hours	Notional hours
		900	600	1500
Rationale	This course provides students with an opportunity to improve analytical and scientific communication skills, expand knowledge, and conduct a research project relevant to Agricultural Microbiology			
Intended Learning Outcomes	At the end of this course the students will be able to; ● write a research project proposal ● experiment, collect and analyze data, generate information, and propose solutions ● present findings and synthesize a project report ● develop organized individual work habits and interpersonal skills			
Course Content	Each student will be required to carry out a guided research project on a specific topic given, under the supervision of an academic staff member and submit a dissertation.			
Method/s of Evaluation:	Evaluation will be based on the - project proposal submitted and defended (10%) - research and analytical skills (10%) - seminar presentation skills (10%) - dissertation presented (40%) - Viva-voce examination (10%) - draft manuscript prepared (20%)			
References	● Recent scholarly articles relevant to the research topic ● Locharoenrat, K. (2017). Research Methodologies for beginners (Available online from Science Library)			

7. Map of Course Modules vs Programme ILOs

(H - Highly correlated; M - Moderately correlated; L – Correlated)

		ILO I	ILO II	ILO III	ILO IV	ILO V	ILO VI	ILO VII	ILO VIII
MAM 5101	General Microbiology	H	L	L	L	L	L	L	L
MAM 5102	Plant Microbe Interactions	H	M	L	L	L	L	L	L
MAM 5103	Agricultural Biotechnology	H	H	H	L	L	H	M	L
MAM 5104	Biostatistics and Experimental Design	H	L	L	H	L	M	M	L
MAM 5108	Microbial Bioinformatics	H	L	M	H	L	M	L	L
MAM 5105	Phytopathogenic Microorganisms	H	H	M	L	L	L	L	L
MAM 5107	Seminar	H	H	M	M	H	H	H	L
MAM 5106	Practical Module I	H	H	H	H	M	H	H	H
MAM 5206	Post-harvest Diseases	H	H	M	L	L	M	M	L
MAM 5209	Food Microbiology	H	H	H	L	L	M	M	L
MAM 5201	Soil Microbiology	H	H	M	L	L	L	L	L
MAM 5207	Plant Disease Management	H	H	H	L	L	M	M	L
MAM 5204	Organic Agriculture	H	H	H	L	L	H	M	L
MAM 5208	Quality Assurance and Laboratory Management in Microbiology	H	H	H	M	L	M	M	M
MAM 5212	Plant inspection and quarantine	H	H	H	L	M	M	M	M
MAM 5213	Entrepreneurship	M	M	H	M	M	H	H	H
MAM 5211	Practical Module II	H	H	H	H	H	H	H	H
MAM 5301	Case study	H	H	H	H	H	H	H	H
MAM 5401	Research Project	H	H	H	H	H	H	H	H

8. Map of Course Modules vs Level Descriptors Learning Outcomes for SLQF Level 10

(H - Highly correlated; M - Moderately correlated; L – Correlated)

		1	2	3	4	5	6	7	8	9	10	11	12
		Subject / Theoretical Knowledge	Practical Knowledge and Application	Communication	Teamwork and Leadership	Creativity and Problem Solving	Managerial and Entrepreneurship	Information Usage and Management	Networking and Social Skills	Adaptability and Flexibility	Attitudes, Values and Professionalism	Vision for Life	Updating Self / Lifelong Learning
MAM 5101	General Microbiology	H	L	M				M		L			H
MAM 5102	Plant Microbe Interactions	H	L	M	M	L		M		L			H
MAM 5103	Agricultural Biotechnology	H	M	L	L	M	L	M		L	L	L	H
MAM 5104	Biostatistics and Experimental Design	H	H	M		H		H		M			
MAM 5108	Microbial Bioinformatics	H	H	M	M	H		H		M	M		
MAM 5105	Phytopathogenic Microorganisms	H	M			L		M		L	M		H
MAM 5107	Seminar	H		H		M		H		L	M		H
MAM 5106	Practical Module I	H	H	H	H	M		H	H	H	H		H
MAM 5206	Post-harvest Diseases	H		M	M	L			L	L	H		M
MAM 5209	Food Microbiology	H	H	M	L	L		L		L			M
MAM 5201	Soil Microbiology	H	L	L	L	L		M		L			M
MAM 5207	Plant Disease Management	H	M	L	L	M	L	M	L	L	M		M
MAM 5204	Organic Agriculture	H	M	M	M	M	M				L		
MAM 5208	Quality Assurance and Laboratory Management in Microbiology	H	H	H	H	H	H	H	H	M	H	H	H
MAM 5212	Plant inspection and quarantine	H	H	M	L	M	L	M	L	M	M		M
MAM 5213	Entrepreneurship	M	M	M	M	M	H	M	M	M	M	H	M
MAM 5211	Practical Module II	H	H	H	H	M		H	H	H	H		H
MAM 5301	Case study	H	H	H	H	H	L	H	M	H	H	H	H
MAM 5401	Research Project	H	H	H	H	H	M	H	H	H	H	H	H

9. Key Contact

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Head, Department of Plant Sciences

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Coordinator, MSc in Agricultural Microbiology (Intake 2026)

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10. Programme Study Board – MSc. in Agricultural Microbiology

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Chair Professor, Department of Plant Sciences, University of Colombo

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Coordinator - MSc in Agricultural Microbiology (Intake 2026)
Senior Lecturer, Department of Plant Sciences, University of Colombo

Dr. K. G. Sameera U. Ariyawansa
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Dr. S. A. Thilini A. Perera
Member of the Programme Study Board
Senior Lecturer, Department of Plant Sciences, University of Colombo

Dr. Pasan C. Fernando
Member of the Programme Study Board
Senior Lecturer, Department of Plant Sciences, University of Colombo

Dr. D. Upeka Rajawardana
External Member of the Programme Study Board
Principal Research Scientist, Industrial Technology Institute

11. Request Forms

Students can use the following request forms to make requests.

- Student Request Form
- Re-scrutiny Form: Re-scrutiny Form can be used to request re-corrections after the provincial results are released.

Student Request Form
MSc/PG Diploma in Agricultural Microbiology

Name of Student:	Reg. No.	Signature:
	Email:	Mobile:
Name of Programme: MSc in Agricultural Microbiology		Department: Plant Sciences
Date of Reg.	Reg. No.	Date of Request:

Nature of Request (Tick as appropriate)

	Deferment of registration
	Medical (for examinations) Course: ……
	Overseas Leave
	Repeat Examination Course: ……
	Fallback option PG Dip.: ……
	Extension (beyond the permitted period) Period: …….
	Other

Recommendation of Coordinator:	Recommendation of Head:
Name of Coordinator:	Name of Head:
Signature: Date:	Signature: Date:

Re-scrutiny Form

Request for re-scrutiny of making of answer scripts

Index No.			
Academic Year		Semester	

Number and Title of the Course	Present Grade Obtained	Expected Grade	Justification

…… ……..

Candidate's Signature Date

For office use only

Subject Code	Before Re-scrutiny		After Re-scrutiny		Comments
	Marks	Grade	Marks	Grade	

…… …… ……

Examiner(s) Signature Date

…… …… ……

Coordinator Signature Date