Postgraduate Certificate in Laboratory Animal Science
PGCert (LAS)

Basic Information

1. **Department:** Department of Physiology
2. **Course Organizer:** Professor Mangala Gunatilake,
   (BVSc, PhD, FSLCVS, CertLAS)
3. **Learning Outcomes:**
   - Demonstrate knowledge and principles (anatomical, physiological and behavioural) that are essential for the use and care of animals recruited for research.
   - Apply ethical principles in lab animal research when designing an animal experiment.
   - Recognize appropriate sedative, anaesthetic and analgesic drugs and methods that could be used in surgeries of lab.
   - Discuss the physical environment and optimal conditions necessary for management of an animal house.
   - Demonstrate all relevant practical aspects in animal experiments including animal handling, feeding, injecting substances, harvesting organs and suturing.
   - Use efficiently and effectively 'Replacement, Refinement, Reduction, Responsibilities and Rehabilitation' concepts in laboratory animal science when conducting an animal experiment.
   - Critically appraise published reports and journal articles related to laboratory animal science.
   - Use appropriate statistical knowledge and skills in conducting research.
   - Develop suitable alternative models using local material with creativity and innovation.
   - Use the knowledge acquired to develop a protocol using lab animals and/or alternatives.
   - Demonstrate skills in communication, team work and leadership, creativity and problem solving, networking and social skills and other professional values which are required as scientists/researchers.
   - Demonstrate self-direction and originality in managing problems.
4. **SLQF Level:** 7
5. **Credit Hours:** 20
6. **Duration in Months:** 6 months

7. **Course Frequency:** on Annual Basis
8. **Course Delivery:**

In-class teaching for the Postgraduate Certificate will be conducted once a week and time allocation will be approximately 170 hours – for lectures and practical, in addition to these 170 hours, approximately 75 hours will be spent on group tasks by the participants during the course. (Time spent on self-directed learning is not included in this).

9. **Entry Criteria:**

A Bachelor (SLFQ 5) or Honorary Bachelor (SLFQ 6) degree from a recognized university, in either Veterinary/Bioscience/Pharmacy/Biomedical/Medical Laboratory Science/ Ayurvedic Medicine & Surgery /Medical Laboratory Technology/ Nursing/ Physiotherapy/ Genetics/ Medical/ Dental are eligible to apply for the Postgraduate Certificate Course.

10. **Admission Process:**

A person who wishes to become a student of the course shall make an application to the Deputy Registrar/Assistant Registrar of the Faculty of Medicine, Kynsey road, Colombo 08 in the prescribed application form. Applications received by the Deputy Registrar/Assistant Registrar shall be referred to the Director of the course. The Director, having examined the applications with necessary qualifications, shall make the selection. The size of the intake will be announced at the time of calling for applications. The participants who are willing to continue for the Postgraduate Diploma following successful completion of the Postgraduate Certificate in Laboratory Animal Science
should submit a proposal within 2 weeks after successful fulfillment of the criteria for awarding the Postgraduate Certificate. The proposals will be scrutinized by the Course Director and approval will be given for suitable projects.

11. **No. of Students per Batch:** 30 students in average
12. **Teaching/ Learning Method(s):**

- Lectures
- Practical sessions
- Video presentations
- Group discussions/ tasks
- Self-directed learning
- Formative assessments

- Project (Only for the Diploma)

13. Assessment Method(s):

A. Minimum 80% attendance in all teaching sessions is needed to be eligible to sit the End of course Assessment.
B. Group tasks (20% marks of this activity will be taken for final mark)
C. End of course assessment – 3 hour SEQ paper (80% marks will be taken for final mark)
D. Component B and C are compulsory for all the eligible participants.
E. Minimum 50% for components B and C will be the pass mark.
F. Those who qualify under A, B, C, D and E will be eligible for the Postgraduate Certificate in Laboratory Animal Science.
G. Those who do not obtain 50% for components B and C with 80% attendance will be able to sit the End of course assessment with the next batch in the following year.
H. Those who do not qualify under A, B, C, D and E in the two consecutive attempts given will have to enroll as a new student and follow the course from the beginning if he/she wants to qualify for the Certificate.

14. Lecture Panel:

<u>International:</u>

- Prof. Vera Baumans – (International Advisor, Netherlands), PhD, Lab animal science expert
- Mr Pim Rooymans (Netherlands), BSc
- Dr Jan Meijer (Netherlands), PhD
- Dr Montip Gettayacamin (Thailand), PhD
- Dr Vijay Pal Singh (India), PhD
- Prof M Akbarsha (India), PhD

<u>Local – Internal:</u>

- Prof Mangala Gunatilake Dept. of Physiology, UOC)
- Prof Preethi Soysa (Dept. of Biochemistry, UOC)
- Dr Dilshani Dissanayake, Dept. of Physiology, UOP)
- Dr Tharanga Thoradeniya (Dept. of Biochemistry, UOC)
- Dr Dulani Samaranayake (Dept. of Community Medicine, UOC)

<u>Local – External:</u>

- Prof Preethi Udugama (Dept. of Zoology, UOC)
- Dr Kamal Perera (IIM, UOC)
- Dr Mayuri Thammitiyagodage (Head/Animal House, MRI)
- Prof Sugandhika Suresh (Senior Lecturer, Dept of Biochemistry, SJP)

- Dr Eranga Rajapaksha (Senior Lecturer, Dept. of Veterinary Clinical Medicine, University of Peradeniya)
- Dr Nayana Wijewardane (Senior Lecturer, Dept. of Veterinary Clinical Medicine, UOP)
- Dr Ramani Karunakaran of MRI
- Dr Chamila Layanaarachchie (Senior Lecturer, University of Peradeniya)

15. **External/Internal Collaborator(s):** Utrecht University, Netherlands
16. **Tuition Fees:** Rs. 30,000/-
17. **Other Fees:**
    - Application fee Rs 270/- per application
    - Registration fee Rs. 2000/- per student
18. **Other Information:**

    Lectures by internationals if they are not in a position to attend, will be conducted as video presentations sent by them.

Core course contents of Modules

1. Introduction
    - Introduction to Laboratory Animal Science
    - History of laboratory animal science – Global view
    - History of laboratory animal science in Sri Lanka with special reference to Faculty of Medicine, Colombo and Medical Research Institute
    - Laboratory animal species

2. Ethics and animal welfare
    - Laws and regulations applicable for use of laboratory animals– International perspective
    - Ethical guidelines - Sri Lankan perspective
    - Replacement, Refinement, Reduction, Responsibilities and Rehabilitation concepts in laboratory animal science
    - Ethics review committees
    - Ethical evaluation of research protocols
    - Discussion on research applications to an ethics committee
    - Basic principles of animal welfare
    - Animal welfare and protection organizations

3. Research
    - Introduction to preparation of an experimental protocol
    - Research methodology and designs

- Sample size calculations
- Statistical analysis
- From brainwave to publication; administrative constraints or quality assurance

4. Anatomy, physiology and behavior
    - General anatomy, physiology and behaviour of lab animals
    - Species specific differences

5. Housing and environment
    - The animal and its environment
    - Environmental Enrichment
    - Management of an animal house
    - Laboratory Animal Standards – AAALAC International Accreditation

6. Pain management
    - Animal Welfare and experimental procedures
    - Peri-operative care and analgesia
    - Micro-surgical techniques
    - Anaesthesia
    - Euthanasia
    - Humane endpoints in animal experimentation

7. Genetics
    - Genetic standardization
    - Animal breeding

8. Pathology and Microbiology
    - Diseases and pathology
    - Microbiology and Gnotobiology
    - Immunity
    - Antibody production

9. Special topics
    - Telemetry
    - Nutrition of laboratory animals
    - Introduction to pre-clinical toxicity studies
    - Responsibilities of the Sri Lanka Association of Laboratory Animal Science (SLALAS)

10. Alternatives to animal experiments
    - Introduction on Alternatives to animal experiments
    - Cell culture technique
    - Zebrafish egg model – Breeding and toxicity studies
    - In vitro EpiDerm skin irritation test
    - Hen Egg Technique
    - IdMOC model

11. Skills
    - Introduction to practical training and experimental techniques
    - Hands on experience on handling, restraining, administration on substances in mice, rats
    - Suturing techniques on a non-animal model
    - Demonstration on Surgical instruments
    - Practical on SPSS package for statistical analysis
    - Mock demonstration on In vitro EpiDerm skin irritation test
    - Zebrafish egg model
    - Post mortem examination of a rat

12. Analytical and protocol development
    - Critical analysis of research articles on LAS and writing a report
    - Development of a project proposal (Research or on LAS education)

13. Completion of the project and submission of project report (Only for the Diploma)
    - Demonstrate self-direction and originality in tackling and solving problems and be able to plan and implement tasks independently in a professional manner

Number of hours of Teaching & Credit Allocation

Name of Module	Lecture Hours	Field Practical Hours	Small Group Discussion Hours	Lab Hours	Self-study Hours	Other Hours	Credit Allocation
1. Introduction	7.5	0	0	0	25	0	1.0
2. Ethics and Animal Welfare	7.5	0	0	0	25	0	1.0
3. Research	10	0	0	0	25	0	1.17
4. Anatomy, physiology and behavior	9	0	0	0	25	1	1.17
5. Housing and environment	7.5	0	0	0	25	0	1.0
6. Pain management	7.5	0	0	0	25	0	1.0
7. Genetics	7.5	0	0	0	25	0	1.0
8. Pathology and Microbiology	7.5	0	0	0	25	0	1.0
9. Special Topics	7.5	0	0	0	25	0	1.0
10. Alternatives to animal experiments	17	0	0	0	50	3	2.33
11. Skills	1	0	0	75	0	0	2.57
12. Analytical and protocol development	0	0	75	0	150	0	4.5

13. End of course Assessment	0	0	0	0	70	3	1.26
14. Completion of the project and submission of project report (Only for the Diploma)	0	0	0	0	0	550	5.67
15. Presentation and viva (Only for the Diploma)	0	0	0	0	0	0.5	0.33