



# PROSPECTUS

For

Part I and II Fellowship  
Training

College Of Veterinary Surgeons  
Nigeria.

2015-2020

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# *PART 1*

# *GENERAL INFORMATION*

## CHAPTER 1

## INTRODUCTION

### 1.1.1 EVOLUTION OF VETERINARY MEDICINE

The veterinary profession could be said to have started following the establishment of the 1<sup>st</sup> veterinary school in Lyon, France in 1762. In Nigeria, veterinary services commence in 1914 at the commencement of the 1<sup>st</sup> World war. The first school for veterinary training in Nigeria was established in Vom. Thereafter, Veterinary Faculties were established in the various Universities. Currently twelve (12) Nigerian Universities offer training in Veterinary Medicine at the undergraduate level.

As is the case with other countries, these trainings inadequately prepare students to practice veterinary medicine. The establishment of postgraduate trainings in these Universities has not significantly improved the situation since the postgraduate programmes (Master and Doctorate) are essentially academic. This situation has necessitated the development of practically oriented trainings which are referred to as Residency or Fellowship programmes.

### 1.1.2 RESIDENCY/FELLOWSHIP TRAINING

Residency/Fellowship as an opportunity for advanced training in a medical or surgical specialty evolved in the late 19th century from brief and less formal programs for extra training in a special area of interest. They became formalized and institutionalized for the principal specialties in the early 20th century. Whereas Veterinary Schools teach a range of medical knowledge, basic clinical skills, and limited experience, residency/fellowship gives in-depth training within a specific branch of Veterinary Medicine.

Whereas the DVM curriculum has been designed to primarily produce a general practitioner, post-graduation professional trainings such as the Fellowship on the other hand, are targeted at producing specialist in the various specialties and subspecialties of Veterinary Practice. To make a distinction of these levels, it would be important to develop a Clinical procedure code (Competency) for the various levels (DVM, Fellowship Parts I and II). This code should clearly spell out what students at the various levels of professional training should be able to conduct.

The philosophy of the programme is thus to train Veterinary Doctors with the sound knowledge of modern Veterinary practice in any of the options who are capable of teaching, treatment and prevention of animal diseases with special impacts on the local tropical environmental conditions.

The College of Veterinary Surgeons Nigeria has the following Faculties and Specialisations/options Viz.:

#### 1. Medicine Faculty

- i. Avian Medicine
- ii. Large Animal Medicine
- iii. Small Animal Medicine
- iv. Wildlife, Aquatic and Laboratory Animal Medicine
- v. Clinical Pharmacology and Toxicology

#### 2. Pathology Faculty

- I. Microbiology
- II. Parasitology
- III. Clinical Pathology
- IV. Diagnostic Pathology

**3. Public health and Preventive Medicine Faculty**

- i. Public Health
- ii. Preventive Medicine

**4. Surgery Faculty**

- i. Theriogenology
- ii. Small Animal Surgery
- iii. Large Animal Surgery
- iv. Anaesthesia
- v. Diagnostic Imaging

**1.1.3 ACADEMIC AND PROFESSIONAL POSTGRADUATE TRAINING**

It is imperative to make a distinction between the regular postgraduate training in various Universities and the CVSN professional programmes. Whereas the regular Master and Doctorate programmes are primarily geared towards producing high calibre researchers in various Veterinary specialties, the CVSN postgraduate training should clearly focus on the production of highly skilled and specialized Veterinary Practitioners.

It is a reality that those who had undertaken postgraduate courses at the M.Sc and PhD levels found similar lecture sessions during the training repetitive. This is more so when most of the students came from the academics. In this Prospectus, the Courses have been revised in such a way as to remain relevant but comprehensible to all categories of students'. Also to be noted are the following positions viz.:

1. PG courses with a similar content to the CVSN courses shall be considered alternatives and the credits transferable.
2. Some refresher courses should be undertaken for students who had graduated 5 or more years ago and have been out of the academics.
3. The fellowship programmes should be specialized and students should only be mandated to take courses in their specialty areas of choice.
4. Core (mandatory) and elective courses should be defined.

**1.1.4 TRAINING OBJECTIVES**

**1.1.4.1 Fellowship Part 1 Programmes**

1. Broadly updating theoretical knowledge of participants
2. Improved competence in Basic clinical or laboratory practice and exposure to advance practices
3. Introduction to advances in the Specialty/field.

**1.1.4.2 Fellowship Part II Programmes**

1. Updating knowledge of students in advanced practices in the chosen specialty
2. Attaining highest level of competence in the Specialty Practice.
3. Perfection of techniques and procedures in specialty area

**CHAPTER 2**

**PROGRAMME ADMINISTRATION AND GENERAL GUIDELINES**

### **1.2.1 PROGRAMME ADMINISTRATION**

The Veterinary Council of Nigeria, for now, remains the financier and coordinating government agency for the College. There shall be for the purpose of directly administering the College Programmes a College Academic Board; Committee of Provost and Heads of Faculty as well as a Faculty Academic Committee. The Secretariat of the College is being overseen by the College Secretary and an Administrative Officer.

#### **1.2.1.1 Veterinary Council of Nigeria**

The Veterinary Council of Nigeria (VCN) being the principal regulatory agency for veterinary practice was established by the Veterinary Surgeons Act of 1969, amended by Act No. 40 of 1987. The council which currently has its headquarters in Abuja in addition to determining the requirements for veterinary training is also responsible for the regulation of veterinary practice as well as ensuring the continued training and retraining of veterinarians.

In fulfillment of these duties, the Council midwived the College of Veterinary Surgeons, Nigeria which is saddled with the responsibility for professional veterinary postgraduate training in Nigeria. Consequent to these, the Council established four (4) Faculties to pioneer the College training viz.:

1. Medicine Faculty domiciled in the University of Ibadan, Ibadan.
2. Surgery and Theriogenology Faculty domiciled in the Ahmadu Bello University Zaria.
3. Public Health Faculty domiciled in the Ahmadu Bello University Zaria.
4. Pathology Faculty domiciled in the University of Nigeria, Nsukka.

The existing Administrative Bodies of the College as well as their responsibilities are:

#### **1.2.1.2. College Academic Board**

##### **Composition:**

1. Provost - **Chairman**
2. Deputy Provost
3. Head of the 4 Faculties
4. 3 other elected members from each Faculty
5. College Secretary - **Secretary**

##### **Subcommittees:**

1. Admission Subcommittee
2. Convocation Subcommittee
3. Budget Subcommittee
4. Publications Subcommittee
5. Honorary Fellowship Award Subcommittee

##### **Functions:**

1. Election of Provost and Deputy Provost
2. Consideration and approval of examination results
3. Consideration and Approval of graduation list
4. Consideration and approval of convocation
5. Consideration and approval of New programmes and Study Centres
6. Consideration and approval of Curriculum
7. Consideration and Approval of awardees for Honorary Fellowship.
8. Consideration and approval of admission
9. Consideration and approval of College Calendar

### **1.2.1.3 Committee of Provost and Heads of Faculty**

#### **Composition:**

1. Provost - **Chairman**
2. Deputy Provost
3. Head, Medicine Faculty
4. Head, Pathology Faculty.
5. Head, Public Health and Preventive Medicine Faculty.
6. Head, Surgery Faculty.
7. College Secretary – **Secretary.**

#### ***Functions***

1. Overall coordination of College activities
2. Consideration and forwarding recommendations on examination results
3. Consideration and forwarding recommendations of graduation list
4. Preliminary consideration and approval of convocation
5. Preliminary approval of New programmes and Study Centres
6. Consideration and forwarding recommendations of Curriculum reviews
7. Drawing up the College Calendar for the Board's consideration.

### **1.2.1.4 Faculty Academic Committee**

#### **Composition:**

1. Head of Faculty
2. Supervisors
3. Faculty Resource Persons.

#### **Functions:**

1. Teaching College courses
2. Supervision of practical sessions and projects
3. Conduct of examinations
4. Attendance at Seminars
5. Preliminary consideration and recommendation of results
6. Consideration of Faculty revised curriculum

### **1.2.1.5 Congregation of Fellows**

#### **Composition**

1. All Fellows of the CVSN.

#### **Functions**

1. Election of College Academic Board
2. Participation in Convocations.

### **1.2.1.6 College Secretariat**

The Secretariat of the college is hosted in the Veterinary Council of Nigeria Building in Abuja, Nigeria.



The Secretariat is headed by a Secretary. The Secretariat serves as the link between the College and the Veterinary Council who are in the interim the financiers of the various programmes.

**Phone No.:** 09/2916869  
**e-mail:** cvs nabuja@gmail.com  
**website:** www.vcn.gov.ng

### 1.2.1.7 College Study Centres

Four Study Centres are currently approved for the various College programmes. These Centres are:

1. Ahmadu Bello University (All Faculties)
2. National Veterinary Research Institute, Vom (Pathology Faculty)
3. University of Ibadan, Ibadan (Medicine, Public Health and Pathology Faculties)
4. University of Nigeria, Nsukka (Pathology and Surgery & Theriogenology Faculties)



Fig.1.1: CVSN Study Centres  
 ◇ = Study Centres

### 1.2.2 APPLICATION AND ADMISSION PROCEDURE

1. Advertisement of the programmes within the 1<sup>st</sup> quarter in the corresponding year.
2. Purchase of the Application Form by applicants.
- 2 Submission of the forms to the College Secretary.
- 3 Sorting and forwarding forms to the Admissions Committee
- 4 Consideration of applications by the Admission Committees
- 5 Consideration and approval of recommended admission list by the College Academic Board.
- 6 Notification of the Council of the admission list.
- 7 Publication of the admission list.
- 8 Registration by admitted students.

### 1.2.3 ADMISSION REQUIREMENTS

The College specifies the benchmark for admission into both the Fellowship I & II programmes.

#### 1.2.3.1 Fellowship Part 1

1. DVM or equivalent from a VCN recognised University
2. Valid registration with the VCN
3. Minimum of 3 years relevant post-graduation experience
4. NYSC Discharge Certificate or Exemption Letter.
5. Academic transcript
6. Recommendation by at least 2 Fellows.
7. Additional qualifications in relevant areas maybe an advantage.
8. Additional criteria as maybe determined by each Faculty.

#### **1.2.3.2 Fellowship Part II**

1. DVM (or equivalent) plus successful completion of Part I Fellowship.

#### **1.2.4 AWARD OF COLLEGE FELLOWSHIP**

The following Diplomas shall be awarded thus:

- i. Fellowship Diploma in Medicine (FCVSNM)
- ii. Fellowship Diploma in Pathology (FCVSNPath.)
- iii. Fellowship Diploma in Public Health (FCVSNPub.)
- iv. Fellowship Diploma in Surgery (FCVSNs)

#### **1.2.4.1 Award by Training**

1. Successful completion of the 5 year training (Part I and II).

#### **1.2.4.2 Honorary Award**

1. Fellowship by peer review shall be considered for the following categories of Veterinary Surgeons:

- i. Practicing Veterinarians with at least 30 years post qualification experience and a minimum of 5 publications and 5 conference presentations in the relevant specialty.
- ii. Veterinary Surgeons who have risen to the rank of a Federal Director or equivalent and have made significant contributions to the development of Veterinary Medicine.
- iii. In all situations, this must be approved by the corresponding Faculty and the College Academic Board.

2. Persons selected for exemplary contribution to Veterinary Medicine.

3. Holders of similar qualifications (with minimum study period of 3 years) recognised by the Veterinary Council of Nigeria e.g. American College of Veterinary Surgeons, European College of Veterinary Surgeons etc. shall be concurrently accredited and given Honorary Fellowships.

4. Fellowship by peer review and consideration for waivers shall be considered for the following categories of Veterinary Surgeons:

5. Practicing Veterinarians with at least 30 years post qualification experience and a minimum of 5 publications and 5 conference presentations in the relevant specialty.
6. Veterinary Surgeons who have risen to the rank of a Federal Director or equivalent and has made significant contributions to the development of Veterinary Medicine.
7. In all situations, this must be approved by the Faculty Board and the College Academic Board.

#### **1.2.4.3 Consideration for Course Waivers**

1. All Residents are eligible for consideration for Course waivers.
2. Waivers shall be granted on a course by course basis only after passing the corresponding examination.

3. Practical; Seminar and Conference presentations; Publications and Projects (as the case may be) shall be undertaken by all students.
4. Procedure for Consideration of Waiver Requests are :
  - i. Applicant must secure an admission for the College Fellowship programme.
  - ii. An application, conveying the request for waiver (and stating Courses for which waiver is requested as well as the justification for the request should be forwarded to the Head of Faculty.
  - iii. The applicant's academic transcript for the relevant postgraduate degree is forwarded (synopsis of the relevant courses maybe attached).
  - iv. Residents are to sit for the relevant examination (during the resit examination for the preceding year)
  - v. Results of such Residents shall be considered at the pre-session meeting of the Faculty Resource Persons.
  - vi. Conditional waivers shall be granted by the Faculty (upon considering the results) subject to confirmation by the College Academic Board.
  - vii. Heads of Faculty are to forward the Faculty's recommendation to the College Academic Board (stating courses waived).

#### **1.2.5 REGISTRATION AND FEES**

1. All students are to obtain their registration documents from the Administrative Officer/Supervisor at the Study Centre.
2. Payment of requisite fees or provide evidence of payment (results of students with outstanding fees shall be withheld).
3. Fill the registration forms and attach copies of credentials (for fresh students).
4. Submit registration documents to the Administrative Officer/Supervisor along with a passport photograph and specimen signature (for ID cards).
5. Collect and make copies of the Lecture schedules; Instructors visitation/lecture schedules; time table; Clinic logbooks; Projects, Waivers request, Presentations and Clinical engagement guidelines) from the Administrative Officer/Supervisor.

The fee for the various Specialties as well as level of training shall be as determined by the College from time to time.

#### **1.2.6 ACCREDITATION OF STUDY CENTRES**

The CVSN has established the benchmark to ensure that other Faculties/Colleges of Veterinary Medicine and their corresponding Veterinary Teaching Hospitals who meet the requisite requirements are given the permission to host the relevant Specialty.

The basic requirements include:

1. Declaration of intention to be accredited as a Study Centre.
2. A minimum of 2 Fellows in the Faculty Specialty/subspecialty being accredited.
3. Minimum equipment/facilities as presented in the Accreditation documents
4. Offering accredited relevant postgraduate programmes (where applicable).
5. Presence of a Clinical facility for training
6. Minimum caseload of 10 cases/samples per week in the relevant specialty (where applicable).

## **CHAPTER 3**

### **GENERAL GUIDELINES**

### 1.3.1 PROJECT ADMINISTRATION

As part of the training, the resident should complete an investigative project that contributes to the advancement of Veterinary Medicine. The allocation of Supervisors and Project topics shall at the commencement of Year 2 of the Fellowship Part II on-campus semester.

Project proposals shall be defended at the end of the Year 2 on-campus session; this is to facilitate the conduct of the Projects within the 9 months off-campus session. Thereafter, all projects are to be defended at the end of the final year or earliest meeting of the Instructors thereafter. Failure to defend the project at this time shall mean deferment of graduation for a session.

1. Project topics and Supervisors shall be assigned to year 2 students within the 1<sup>st</sup> 4 weeks of the Session.
2. Students are to discuss (with their Supervisor) their proposed research topics; write up a proposal and defend same at the end of the 2<sup>nd</sup> Session.
3. Projects are to be undertaken during the vocation proceeding year 3 of the study.
4. Students MUST communicate the progress of their work to the supervisor monthly.
5. Upon completion of the project, a request shall be sent to the Centre Supervisor through the Project Supervisor on the readiness of the student to defend his/her project.
6. Project defenses are to be conducted at the next meeting of Instructors for the corresponding Faculty.
7. 4 copies of the bound Project report are to be submitted (within 3 months of a successful defense) for endorsement viz.: student, supervisor, Faculty Library and CVSN Secretariat copies.

**N.B:** Project grades shall remain INCOMPLETE until bound copies of the endorsed Project report is forwarded to the Head of Faculty.

### 1.3.2 SEQUENCE OF PROJECT REPORTING

- |  |                                 |  |
|--|---------------------------------|--|
| <ol style="list-style-type: none"> <li>1. <b>Cover page</b></li> <li>2. <b>Title page</b></li> <li>3. <b>Declaration page</b></li> <li>4. <b>Certification page</b></li> <li>5. <b>Acknowledgment</b></li> </ol>   | } All in single or 1.15 spacing |  |
| <ol style="list-style-type: none"> <li>6. <b>Abstract</b> (Maximum of 300 words/1 page)</li> <li>7. <b>Table of Content</b> (Should reflect only the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> tiers of the headings)</li> <li>8. <b>List of Figures</b></li> <li>9. <b>List of Tables</b></li> <li>10. <b>List of Plates</b></li> <li>11. <b>List of Appendices</b></li> <li>12. <b>Abbreviations, Definitions, Glossary and Symbols</b></li> </ol> | } 1.5 or double spacing         |  |
| <ol style="list-style-type: none"> <li>13. <b>Introduction</b> (Preamble, Statement/Justification, Aims and Objectives of the Project work)</li> <li>14. <b>Literature Review</b></li> </ol>   | }                               |  |



This Project report entitled \_\_\_\_\_ (in upper case) by \_\_\_\_\_ (surname last and in upper case) meets the regulations governing the award of Member/Fellow, College of Veterinary Surgeons Nigeria, and is approved for its' contribution to knowledge and literary presentation.

(Name) \_\_\_\_\_ (Signature) \_\_\_\_\_ Date \_\_\_\_\_  
Project Supervisor

(Name) \_\_\_\_\_ (Signature) \_\_\_\_\_ Date \_\_\_\_\_  
Study Centre Supervisor

(Name) \_\_\_\_\_ (Signature) \_\_\_\_\_ Date \_\_\_\_\_  
Head of Faculty

### **Acknowledgment**

The acknowledgement should contain a brief note of appreciation to all those who contributed to the success of the study.

### **Abstract**

The abstract should not exceed 300 words which approximates 1 page. It should be typed double spaced using Times New Roman characters, font size of 12 and margins justified.

Abstract should be brief indicating the statement of the problem, objectives of the work, methodology, significant findings and conclusions.

### **Table of Content**

This is a listing of the various sections and subsections of the Project report indicating the pages they occur. The table of contents should be double spaced. If the title of a section runs more than one line, subsequent lines are single spaced and not indented.

The table of contents should reflect only the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> tiers of the headings. Whereas 1<sup>st</sup> level headings are to be in upper case and bold, 2<sup>nd</sup> level headings should be in a title case and also bold. Third level headings should not be bold and in a sentence case.

### **List of Figures, Tables, Plates and Appendices**

Where the title of the figure, table, plate or appendix runs more than one line, subsequent lines are single spaced and not indented.

### **Abbreviations, Definitions, Glossary and Symbols**

All abbreviations and symbols used should be explained. Terms used can also be presented as a glossary.

### **Chapter 1: Introduction**

A brief review of the research subject is given. The statement of the problem should be well articulated i.e. problems/research questions should be clear and precise.

The introduction should consist of at least a. Statement of the problem. b. Justification/significance of the study. c. Aim and objectives of the study. d. Research question/research hypothesis.

### **Chapter 2: Literature Review**

This should be a concise report about the studies of others on the subject matter. It should be logically arranged and up to date. A significant number of the references ( $\geq 70\%$ ) should be within the preceding 5 years.

### **Chapter 3: Materials and Methods**

A detailed itemization of consumable and non consumable materials as well as description of the research methodology should be made. Research/experimental designs, sample and sampling techniques, methodological instruments and equipment; methods of analysis (statistical or otherwise) as well as other aspects of the methodology relevant to the study should be clearly and comprehensively stated.

### **Results and Discussion**

Data obtained should be well presented and analysis articulated. Major findings should have direct bearing with the statement of the problem and/or research questions.

The Discussion presents explanations for the results obtained in the study. Comparison with existing information/earlier works on the subject should always be made. Justification for disagreements with earlier works should be made.

### **2.1.15 Summary, Conclusion and Recommendations**

The summary should present highlights of the major findings while the conclusions give an inference drawn from the findings. Challenges encountered during the study should be indicated. Conclusions should be drawn on the basis of the data presented and analysed.

Recommendations should be based on the major findings of the study and stated in precise terms. It should list possible ways of solving problems identified as well as highlight areas for further study.

*PART 2*

*MEDICINE FACULTY*





*PART 3*

*PATHOLOGY  
FACULTY*



*PART 4*

*PUBLIC HEALTH  
FACULTY*



# *PART 5*

# *SURGERY FACULTY*

## CHAPTER 1

### TRAINING VENUE AND FACILITIES

#### 5.1.1 STUDY CENTRES

The Ahmadu Bello University, Zaria and University of Nigeria, Nsukka Study Centres are currently the only approved Study Centres for the Surgery Faculty.

##### 5.1.1.1 Zaria Study Centre

The primary structure hosting the Zaria Study Centre is a 2-winged block donated to the College by the Nasarawa State Government and is shared with other Faculties.



Fig. 5.1: Zaria Study Centre, Ahmadu Bello University, Zaria.

#### General Teaching Facilities/Units

1. ABU Faculty of Veterinary Medicine
2. ABU Veterinary Teaching Hospital
3. Radiology Department, ABU Teaching Hospital Shika, Zaria.
4. Surgery Department, ABU Teaching Hospital Shika, Zaria.
5. Anaesthesia Department, ABU Teaching Hospital Shika, Zaria.
6. National Animal Production Research Institute, Shika Zaria.
7. Selected Government and Private Veterinary Hospitals.

#### Structure/Building

The primary structure hosting the Zaria Study Centre (Fig. 5.4) provides the office and classrooms required for the training of both Membership and Fellowship students. Additional classrooms within the Faculty are also used whenever the need arises.

#### Theriogenology Option

1. Theriogenology laboratory: Theriogenology and Production Department.
2. Artificial Insemination Unit: NAPRI, ABU Shika.
3. Dairy Unit NAPRI, ABU Shika.

#### Large Animal Surgery Option

1. Large Animal Clinic
2. Large Animal Surgery
3. Large animal stable and evaluation room.

### **Small Animal Surgery Option**

1. Surgical Teaching and Research Laboratory/wet lab.
2. Small Animal Clinic: 2 clinic examination rooms and a waiting room.
3. Small Animal Surgery.
4. Dog kennels and cages.
5. Small Animal hospitalization room.
6. Small animal isolation kennels.
7. Dept. of Surgery, Anaesthesia and Radiology, ABUTH Zaria.

### **Anaesthesia Option**

1. Surgical Teaching and Research Laboratory/wet lab.
2. Large Animal Surgery.
3. Small Animal Intensive Care room.
4. Dept. of Anaesthesia, ABUTH Zaria.

### **Diagnostic Imaging Option**

1. Diagnostic Imaging Centre.
2. Radiology Department, ABUTH Shika Zaria.

#### **5.1.1.2 Nsukka Study Centre**

The Nsukka Study Centre is domiciled in the Faculty of Veterinary Medicine, University of Nigeria, Nsukka.

### **General Teaching Facilities/Units**

### **Structure/Building**

### **Theriogenology Option**

### **Small Animal Surgery Option**

#### **5.1.2 CONTACTS**

##### **Surgery Faculty Coordinator:**

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Nigeria.

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##### **Zaria Study Centre Surgery Faculty Supervisor**

Dr. Garba Kwanashie DVM, FCVSN



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E-mail: [ggkwanashie@yahoo.com](mailto:ggkwanashie@yahoo.com)

### **Nsukka Study Centre Surgery Faculty Supervisor**

Name:

Phone No:

E-mail:

## **5.1.3 ACCREDITATION ACTIVITIES**

### **5.1.3.1 Additional Study Centres**

In addition to the CVSN requirements however, the intensiveness in terms of the demand on resources and personnel, the Surgery Specialty shall ensure that any Veterinary School applying to host this Specialty fulfils the following:

1. Has a minimum of 2 Fellows in the sub-specialty it intends to host.
2. Undertaking a postgraduate programme in the relevant subspecialty is an added advantage.
3. Posses at least 70% of the equipment required to teach the subspecialty of interest.
4. Establish affiliations with relevant Institutions who should have available those facilities it is deficient in.
5. Has the minimum equipment sufficient to pass both the VCN and NUC's postgraduate accreditation requirements (where applicable).

### **5.1.3.2 External/Vocational Clinics**

For the purpose of its Vocational Clinic attachment, the Surgery Faculty shall accredit any clinic which indicates its interest to serve as a training facility for Surgery/Theriogenology Members or Fellows during the 8 Month vocation.

#### **Veterinary Teaching Hospitals:**

All Veterinary Teaching Hospitals duly accredited by the Veterinary Council of Nigeria shall be recognised as accredited Study Clinics for the aforesated purpose. An additional requirement however is that, a Fellow must oversee to the vocational attachment and certify same by endorsing the corresponding Logbook.

#### **State Central Veterinary Clinics/Hospitals:**

In states where Veterinary Teaching Hospitals are not available the Central Veterinary Clinic/Hospital in the State shall be inspected for its suitability to serve as a Study Clinic for the students. Such Clinics/Hospitals shall however be expected to have the minimal equipment and personnel required for accreditation of Study Centres. A minimum of One Fellow to oversee the attachment is required.

#### **Other Veterinary Clinics/Hospitals:**

Other Public or Private Veterinary Clinics may also be considered for the purpose of serving as Study Clinics if they indicate such an interest. The conditions laid out in 5.1.4.2 shall also apply.

## **5.1.4 TRAINING OBJECTIVES**

**5.1.4.1 Part I Fellowship: Theriogenology Option**

1. To provide a broad understanding of the subject of Theriogenology (Small, Equine and Food Animals).
2. To provide an understanding of the approach to diagnosis of commonly encountered Theriogenology conditions in Large and Small Animals as well as their management.
3. To develop aptitude and skills in the diagnosis and manipulation of obstetrical conditions.
4. To satisfy the requirements for examination by the College of Veterinary Surgeons, Nigeria (CVSN).

**5.1.4.2 Part II Fellowship: Theriogenology Option**

1. To provide an advanced understanding of the subject of Theriogenology (Small, Equine and Food Animals).
2. To instruct in the art and science of Theriogenology and its allied discipline.
3. To provide an understanding of the approach to diagnosis of rare and complex Theriogenology conditions in Large and Small Animals as well as their management.
4. To develop aptitude and skills in the diagnosis and manipulation of obstetrical conditions.
5. To provide experience in designing and conducting a Theriogenology research project.
6. To provide experience in the preparation of scientific articles for publication and/or presentation.
7. To satisfy the requirements for examination by the College of Veterinary Surgeons, Nigeria (CVSN).
8. To provide an opportunity to pursue career goals in teaching, research and clinical service in Theriogenology.

**5.1.4.3 Part I Fellowship: Surgery Option**

1. To provide a broad understanding of the subject of Surgery.
2. To achieve proficiency in techniques introduced to the students in their undergraduate study.
3. To improve the student's understanding of the approach and management of commonly encountered surgical cases.
4. To satisfy the requirements for Membership examination by the College of Veterinary Surgeons, Nigeria (CVSN).

**5.1.4.4 Part II Fellowship: Large Animal Surgery Option**

1. To provide a broad understanding of the subject of Large Animal (Equine and Food Animal) surgery.
2. To provide an understanding of the design of a Large Animal surgical facility and its equipment.
3. To instruct in the art and science of Large Animal surgery and its allied discipline.
4. To provide an understanding of the approach to diagnosis of commonly encountered surgical disease of Large Animal Animals.
5. To develop aptitude and skills in the peri-operative care and operative treatment of Large Animal patients.
6. To have an understanding of pain management in Large Animals.
7. To provide experience in designing and conducting a clinical research project.
8. To provide experience in the preparation of scientific articles for publication and/or presentation.
9. To satisfy the requirements for examination by the College of Veterinary Surgeons, Nigeria (CVSN).

10. To provide an opportunity to pursue career goals in teaching, research and clinical service in Large Animal surgery.

#### **5.1.4.5 Part II Fellowship: Small Animal Surgery Option**

1. To provide a broad understanding of the subject of small animal surgery.
2. To provide an understanding of the design of small animal surgical facility and its equipment.
3. To instruct in the art and science of small animal surgery and its allied discipline.
4. To provide an understanding of the approach to diagnosis of commonly encountered surgical disease of small animals.
5. To develop aptitude and skills in the peri-operative care and operative treatment of small animal patients.
6. To have an understanding of pain management in small animals.
7. To provide experience in designing and conducting a clinical research project.
8. To provide experience in the preparation of scientific articles for publication and/or presentation.
9. To satisfy the requirements for examination by the College of Veterinary Surgeons, Nigeria (CVSN).
10. To provide an opportunity to pursue career goals in teaching, research and clinical service in small animal surgery.

#### **5.1.4.6 Part II Fellowship: Anaesthesia Option**

1. To provide an understanding of the broad subject of veterinary anaesthesia.
2. To provide an understanding of the function and operation of anaesthetic and monitoring equipment.
3. To instruct in the basic sciences relating to the practice of anaesthesia.
4. To relate patho-physiology of diseases and abnormalities of organ systems to anaesthetic management and life support.
5. To develop aptitude and clinical proficiency in anaesthetic management of diverse animal species for diagnostic, medical, obstetrical and surgical procedures.
6. To have an understanding of pain management in different species.
7. To provide experience in designing and conducting clinical research project.
8. To provide experience in the preparation of scientific articles for publication and/or presentation.
9. To satisfy the requirements for examination by the College of Veterinary Surgeons, Nigeria (CVSN).
10. To provide an opportunity to pursue career goals in teaching, research and clinical service in veterinary anaesthesia.

#### **5.1.4.7 Part II Fellowship: Diagnostic Imaging**

1. To provide a general understanding of a variety of diagnostic imaging techniques used in veterinary medicine, with particular emphasis on radiology and diagnostic ultrasound.
2. To provide an understanding of the operation and maintenance of diagnostic facilities and equipment.
3. To instruct in the steps required to obtain an image of diagnostic quality.
4. To instruct in the normal and pathological anatomy and physiology, including biological and pharmacological actions of the materials administered to patients in diagnostic studies.
5. To develop aptitude and skills in the interpretation of radiographs and ultrasonograms.
6. To provide an understanding of the complementary role of both radiography and sonography.

7. To provide supervised experience in basic interventional procedures, such as image-guided biopsies and fine-needle aspirates.
8. To provide experience in designing and conducting clinical research project.
9. To provide experience in the preparation of scientific articles for publication and/or presentation.
10. To satisfy the requirements for examination by the College of Veterinary Surgeons, Nigeria (CVSN).
11. To provide an opportunity to pursue career goals in teaching, research and clinical service in veterinary diagnostic imaging.

## CHAPTER 2

### PROGRAMME DESCRIPTION

#### 5.2.1 CLINICS MANAGEMENT

Supervised training implies interaction between trainee and supervisor during the diagnosis and treatment of patients as well as during case related discussions, etc. Such supervision requires the simultaneous physical presence of both trainee and supervisor at the clinic where patients are treated. The amount of supervision required will vary with the experience, skill and knowledge of the trainee. Clinical training for the Surgery Specialty shall consist of:

1. Specialised Clinics (Theriogenology, Diagnostic Imaging and Surgery Clinics)
2. Clinical Procedures (On and Off Campus/Vocation)
3. Clinical seminar/presentations/Conference presentations
4. Vocational Clinic Attachment (8 Hrs/week & 6 months/session)

##### 5.2.1.1 Guidelines for Surgery Faculty Residents Clinical Engagement:

1. All Surgery Faculty students are to dress appropriately and conduct themselves responsibly in Clinics/Surgery.
2. All Surgery Faculty students are to participate in the Clinics (VTH and Vocational Clinics)
3. Relevant cases attended to, are to be documented and endorsed in the corresponding Clinical Activity Logbook, this shall be submitted to the Course Coordinator at the end of the Semester (VTH Clinics) or on resumption in the succeeding Semester (for Vocation Clinics) for grading.
4. Records of attendance at the clinics are to be endorsed daily.
5. Students are to actively participate in the management of cases presented especially relevant cases to their Specialty/option of study.

##### 5.2.1.2 Specialised Clinics

Supervised Clinical/practical sessions shall be undertaken. The listed clinical activities/practical sessions/demonstrations shall be undertaken and or discussed:

#### i. Theriogenology Clinics

- Identification and acquaintance with the use of Theriogenology equipment and facilities
- Use of milking machine and other milking procedures
- Examination of the udders, teat and performance of the Dip test
- Mastitis screening tests
- Examination of the male and female genitalia in various species.
- Identification of pathology in genitalia
- Examination of slides of genital pathology
- Determination of estrus in domestic animals.
- Breeding soundness examination in males of various species
- Breeding soundness examination in females of various species
- Determination of weights in animals

- Neonatal care services:
  - a. Warmth provision
  - b. Clean the foetal nostrils and oral cavity
  - c. Colostrum suckling
  - d. Artificial colostrum preparation
  - e. Examine for udder abnormalities and teat conformation
- Restraint and conduct of semen collection
- Semen collection methods:
  - a. Electro ejaculator method:
  - b. Rectal probe,
  - c. Artificial Vagina method:
  - d. Cloaca twisting method (poultry)
  - e. Masturbation in dogs
- Semen extension and evaluation
- Pregnancy diagnosis by visual inspection, rectal/abdominal palpation and hormone assay in various species.

-Conduct a pregnancy diagnosis by Ultrasonography in various species

## **ii. Small Animal Surgery Clinics**

- Use of Lasers in surgery
- Advanced pre surgical evaluation Protocols(BP, blood group, hydration status, blood glucose levels, hepatic and renal evaluation)
- Open heart surgery &vascular surgeries
- CNS surgery: craniotomy and laminectomy, spinal decompression
- Parotid duct transposition
- Lens replacement
- Cataract surgery
- Glaucoma Surgery
- Corneal grafts
- Organ transplants: kidney, bone and skin, bone marrow
- ASIF fixation of fractures
- Advance skin flap techniques
- Thoracotomy in dogs: thoracic oesophagostomy, lobectomy, thoracic fluid and air evacuation.
- Dental scaling, filing and care
- Vascular cannulation & by pass
- Hepatectomy and splenectomy
- Use of surgical prosthesis: bone, ureter, vascular and urethra
- Endoscopy/Laparoscopic surgeries
- Joint arthrodesis
- Reconstructive surgeries: valgus deformity, otoplasty, penile and vulva reconstruction post-amputation
- Surgical emergencies
- Advances in wound mgt
- Wound dressing & mgt
- Middle and inner ear surgeries
- Pyloroplastic procedures
- Techniques in resection and anastomosis
- Open management of pelvic fractures

## **iii. Large Animal Surgery Clinics**

- Advance pre surgical evaluation protocols (BP, blood group, hydration status, blood Glucoselevels, hepatic and renal evaluation)
- Surgeries of the neck in horses: laryngeal Ventricullectomy etc
- Surgical management of abomasal displacement
- Surgery of the female reproductive tract: ovariectomy in the mare and caesarean section in ruminants.
- Identification and use of Surgical Instruments and equipment
- Identification and preparation of Surgical packs
- Identification and use of Wound Dressing Materials:
- Use of slings
- Identification and use of suture materials
- Preparation of Large Animal surgical patients.
- Surgical Team Preparation:
- Suture patterns
- Examine the shoe on horse
- Hoof cleaning and trimming
- Open castration in a boar
- Castration in piglets
- Pre- and post-operative evaluation in Large Animals
- Relieve bloat
- Dehorning in a kid/goat
- Elastrator and Burdizzo
- Tail docking in sheep
- Teat surgeries
- Lameness evaluation.

#### iv. Diagnostic Imaging Clinics

- Diagnostic Imaging Instrumentation/hardware
- Digital radiography
- Abdominal ultrasonography
- Genitourinary ultrasonography
- MUS in pregnancy assessment and diagnosis
- Ultrasonographic interpretation
- Soft tissue radiographic interpretation
- Contrast techniques: GIT, HSG, Pyelography, myelography, angiography, bronchography,
- Advances in film processing; daylight processing,
- Filmless radiography: teleradiography, e-referral in radiography
- Techniques in CT and MRI
- Nuclear imaging
- Principles of radiation therapy
- Techniques in radiation therapy
- Review of radiographic techniques
- Development of radiographic technique chart
- Neuro-radiographic techniques

#### v. Anaesthesia Clinics

- General anaesthesia in ruminants and associated complications
- Management of acid-base imbalance
- Blood replacement
- Advances in intensive care
- Anaesthetic emergencies and management
- Pain management (general and peri-surgically)
- Local anaesthetic protocol in Small animals.
- Pre-operative clinical assessment - interpretation of laboratory data (haematology, serum biochemistry, urinalysis, blood gas analysis, etc) with reference to the preparation and suitability of an animal for sedation and/or anaesthesia.
- Analgesia - recognition of pain
- Application of analgesic techniques before, during and after a surgical procedure
- General anaesthesia:
  - a) anaesthetic administration equipment
  - b) anaesthetic monitoring equipment
  - c) intravenous anaesthesia
  - d) inhalational anaesthesia
  - e) muscle relaxation
  - f) intermittent positive pressure ventilation
  - g) care of the unconscious animal
- Fluid therapy - the principles and practice of fluid therapy
- Anaesthetic accidents and emergencies - recognition and treatment
- Local and regional analgesia - their application topically, by local infiltration, regional, epidural and spinal techniques in veterinary anaesthesia.
- Blood pressure and gas determination and significance
- Intra-operative patient management: pulse oximeter, etc
- Intra-operative/emergency ventilation
- Cerebral-Cardiopulmonary resuscitation (CAB concept)
- Inhalation anaesthesia 1: Equipment, Maintenance and complications
- Anaesthetic emergencies
- Advances in shock management
- Anaesthetic support
- Special anaesthetic protocols (obesity, brachycephalics, trauma, liver and kidney disease patients,
- General anaesthesia in ruminants: requirements and problems
- General Anaesthesia in pigs
- General anaesthesia in horses
- General anaesthesia in reptiles, birds and exotic species
- Wildlife immobilization.

### **5.2.1.3 Vocational Clinics**

All Residents/Fellowship trainees are to participate in relevant clinical activities within the 8 month off campus period. A minimum of 8 Hrs per week shall be allocated for a minimum of 6 months. Recognised Centres for such attachment shall be:

1. Veterinary Teaching Hospitals.
2. Veterinary and Allied research Institute with Fellows in their employment such as NVRI Vom, NAPRI Shika etc.
3. State Central Veterinary Hospitals (State Capitals)
4. Human Medical facilities for Anaesthesiology and Diagnostic Imaging options.
5. Accredited Private Veterinary Clinics/Hospitals.

Emphasis shall be on the student managing and reporting a minimum of ten cases in his/her specialty. The following are suggested for the assessment of students in attachment.

1. The immediate supervising veterinarian shall countersign cases reported by the resident.
2. A harmonized log book has been designed for the attachment.
3. The supervising instructor should visit the student at site at least once and assess the resident's conduct and participation.
4. Residents should write up at least 10 cases to publication standard within each such session which would be graded by the relevant Instructor.
5. At the completion of the attachment, results are to be collated by the coordinator of the attachment and computed. The issued score and grade should be a part of the result for the succeeding level of training.

### **5.2.1.4 Clinical Procedures**

The Clinical Procedures logbook shall be used for the documentation and accomplishment of the various tasks and development of skills by the Part I Fellowship residents only.

The relevant sections are to be signed by the supervising veterinarian. Trainees are expected to successfully undertake a minimum of 80% of the procedures listed in the logbook before graduation. The various activities can be undertaken during the on or off campus trainings. In all cases however a registered veterinarian (preferably a Fellow) must certify to the proficiency of the student in each of the supervised tasks/skills.

## **5.2.2 PROGRAMME STRUCTURE**

The activities in each option as well as in each year of study detailing the Credit Unit allocation is presented in the table (Table 5.1)



Table 5.1: Programme Structure for Surgery Specialty/Faculty

<b>Surgery Fellowship Part I</b>							
<b>Year</b>	<b>Course work</b>	<b>Clinics (Regular &amp; vocational)</b>	<b>Project</b>	<b>Conference, Seminar &amp; Publication</b>	<b>Practical</b>	<b>Subtotal</b>	<b>Total</b>
<b>1</b>	5	4	0	0	3	11	<b>26</b>
<b>2</b>	7	4	0	1	3	15	
	12	8	0	1	6		
<b>Small Animal Surgery Fellowship Part II</b>							
<b>3</b>	10	4	0	0	0	14	<b>38</b>
<b>4</b>	6	4	0	1	3	14	
<b>5</b>	0	2	6	2	0	10	
	16	10	6	3	3		
<b>Large Animal Surgery Fellowship Part II</b>							
<b>3</b>	7	4	0	0	1	12	<b>34</b>
<b>4</b>	4	4	0	1	3	12	
<b>5</b>	0	2	6	2	0	10	
	11	10	6	3	4		
<b>Diagnostic Imaging Fellowship Part II</b>							
<b>3</b>	9	4	0	0	1	14	<b>36</b>
<b>4</b>	6	4	0	1	1	12	
<b>5</b>	0	2	6	2	0	10	
	15	10	6	3	2		
<b>Anaesthesia Fellowship Part II</b>							
<b>3</b>	8	4	0	0	1	13	<b>32</b>
<b>4</b>	4	4	0	1	0	9	
<b>5</b>	0	2	6	2	0	10	
	12	10	6	3	1		
<b>Theriogenology Fellowship Part I</b>							
<b>1</b>	4	4	0	0	3	11	<b>25</b>
<b>2</b>	6	4	0	1	3	14	
	10	8	0	1	6		
<b>Theriogenology Fellowship Part II</b>							
<b>3</b>	3	4	0	0	1	8	<b>31</b>
<b>4</b>	8	4	0	1	0	13	
<b>5</b>	0	2	6	2	0	10	
	11	10	6	3	1		

### **5.2.3 LECTURES, PRACTICAL AND EXAMINATIONS**

#### **5.2.3.1 Programme Course and Credit Unit Allocations**

1. The minimum duration of training for both Part I and II Fellowship programmes shall be 2 and 3 years respectively.
2. All programmes are to have an on-campus component (minimum 3 months/session) and a vocational training component (minimum 6 months/session)
3. Written examinations, practical, presentations, term papers, publications as well as assessment of relevant Logbooks (as applicable) shall be the modality for examination of students.

#### **5.2.3.2 Examinations**

There shall be uniform criteria for the assessment of Trainees.

1. Examinations shall be conducted at the end of every on-campus session and all Vocational activities shall be graded along with the succeeding year's examination.
2. 80% of courses must be passed before a student can proceed to the succeeding year of study.
3. For all examinations:
  - a. < 50% = Fail
  - b. 50-59% = C Pass
  - c. 60-69% = B Good
  - d. > 70% = A Excellent

### **5.2.4 SEMINARS, CONFERENCES AND PUBLICATIONS**

1. All write-ups for Seminars, Conference presentations and Publications shall be Case Reports encountered within the period of the Study.
2. Surgery Faculty Seminars shall be held weekly (as indicated in the time table).
3. Students are expected to participate in the Faculty of Veterinary Medicine's Staff and Postgraduate Students Seminars.
- 3 Internal Instructors and Visiting External Instructors (on schedule) as well as all Surgery Faculty students are to participate in the Seminars.
- 4 Conference presentation and Publication printouts are to be submitted to the Course Coordinator for assessment and necessary grading.

N.B: Seminar and Conference presentations or publications preceding admission into the Fellowship programme are not eligible for presentation/assessment/grading.

#### **5.2.4.1 Seminar**

A seminar is a scientific presentation followed by an informed discussion. As well as the training received, the resident should be able to demonstrate active participation in Scientific meetings; Conferences; Continuing education meetings and Seminars.

Clinical teaching is seen as an important role of the resident's active participation in these meetings is seen as a way of developing teaching skills and ability. Residents should take a full part in case conferences throughout their training. The stipulated minimum number of presentations for the level of study should be made by the resident during the training period involving peers and more senior surgeons. Trainees are expected to attend and actively participate in the following Seminars:

1. Veterinary Teaching Hospital Clinical Seminar/Presentations.
2. Faculty of Veterinary Medicine Staff and Postgraduate Students Seminar.
3. CVSN Seminars.

#### **5.2.4.2 Conferences/Publications**

The resident while gaining experience in practice is also expected to prepare and present work at larger scientific meetings and conferences. The required number of Seminar presentations must be made at either local, National or International Conferences within the study period.

The resident is expected to complete an investigative study on any of the Clinical cases handled, the outcome of which should be preferably publishable in a peer reviewed/refereed scientific journal. A refereed journal is one governed by policies and procedures established and maintained by a standing editorial board that requires each manuscript submitted for publication to be subjected to critical review. The publication should discuss surgery topics and be beyond the level of a single case report. Alternatively, the publication may document the development of a new surgical technique or the results of original research. The conclusions must be based on data of more than one case.

Review articles, textbook chapters and short communications will not qualify as a contribution to the conference/publication requirements. If a paper has not been published at the time of assessment, an acceptance letter shall suffice.

**CHAPTER 3**  
**COURSE STRUCTURE AND OUTLINE**

The Course Structure/Outline for the various Options in Surgery is hereby presented in Tables 5.3 – 5.9.

Table 5.3: COURSE STRUCTURE FOR THE THERIOGENENOLOGY FELLOWSHIP PART I PROGRAMME

Year of Study	Course Code	Course Title	Course Description	Credit Units
<b>1</b>	<b>SGS 811</b>	Surgical Preparation and Instrumentation	Pre-op patient evaluation, pre-op cleaning, shaving, draping and administration of medications. Surgical team preparation. Surgical instruments and equipment, washing, degerming, packaging and storage, handling, Instrument sterilization and layout in surgery	1
	<b>THG 811</b>	Basic Reproductive Anatomy and Physiology	Anatomy and physiology of the male and female reproductive organs in Large and Small animals	1
	<b>THG 812</b>	Reproductive Endocrinology; Lactation and Udder Health Management	-Endocrine organs and secretions regulating reproductive activities, their use in manipulating reproduction.  -Lactogenesis and lactation, anatomy and physiology of the mammary gland, conditions of the udder and their management. Control of galactoposis.	2
	<b>THG 814</b>	Theriogenology Clinics 1A	Management of Theriogenology cases and rounds in a hospital setting, documentation of relevant cases in designated logbook.	2 (0-2)
	<b>THG 815</b>	Theriogenology (Vocational) Clinics IB	Management of Theriogenology cases and rounds at an approved facility within the 9 months off campus season, documentation of relevant cases in designated logbook and endorsement by supervising veterinarian. Minimum of 8 hrs/week for the duration of the vocation.	2 (0-2)
	<b>THG 816</b>	Theriogenology Clinical Procedures I	Learning basic techniques necessary for successful clinical practice, documentation and endorsement of procedures successfully performed.	3 (0-3)
	<b>THG 821</b>	Control and Management of Reproduction	Estrus detection and synchronization, mating and insemination techniques, embryo transfer, semen collection, processing and preservation, Physical , chemical and hormonal manipulations of reproductive activity in Large and Small animals	2
	<b>THG 822</b>	Advanced Laboratory Diagnostic Techniques in Reproduction	Chemical and hormone assays to determine pregnancy or state of the reproductive cycle.	2 (1-1)
	<b>THG 823</b>	Advanced Obstetrics	Development and abnormalities of the conceptus, Dystocia, Peri-parturient injuries & conditions.	2
	<b>THG 824</b>	Surgical Procedures in Reproduction	Indications for surgical intervention, surgical and obstetrical procedures in Large and Small Animals.	2 (1-1)

<b>2</b>	<b>THG 825</b>	Seminar (Case Reports)	Presentation of a minimum of 2 cases encountered during the on or off campus clinical attachments.	1
	<b>THG 826</b>	Theriogenology Clinics IIA	Management of Theriogenology cases and rounds in a hospital setting, documentation of relevant cases in designated logbook.	2 (0-2)
	<b>THG 827</b>	Theriogenology (Vocational) Clinics IIB	Management of Theriogenology cases and rounds at an approved facility within the 9 months off campus season, documentation of relevant cases in designated logbook and endorsement by supervising veterinarian. Minimum of 8 hrs/week for the duration of the vocation.	2 (0-2)
	<b>THG 828</b>	Theriogenology Clinical Procedures II	Learning advanced techniques necessary for successful clinical practice, documentation and endorsement of procedures successfully performed.	3 (0-3)
	<b>TOTAL</b>			<b>25</b>
<b>THERIOGENOLOGY FELLOWSHIP PART II</b>				
<b>Year of Study</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Course Description</b>	<b>Credit Units</b>
<b>3</b>	<b>SLA 835</b>	Abdominal and Reproductive Surgeries	Surgical conditions and procedures in the abdominal cavity especially the vulva, vagina, uterus and ovaries	1
	<b>THG 833</b>	Immuno-reproduction	Immunological principles; Ag/Ab complexes; Immune response in infertility; Sperm & zona pellucida Ab.; Immunology of pregnancy; Maintenance of pregnancy (allograft)	1
	<b>SDI 832</b>	Diagnostic Imaging in Pregnancy Evaluation	Use of radiography and Ultrasonography in pregnancy diagnosis and foetal viability assessment.	2 (1-1)
	<b>THG 834</b>	Theriogenology Clinics IIIA	Management of Theriogenology cases and rounds in a hospital setting, documentation of relevant cases in designated logbook.	2 (0-2)
	<b>THG 835</b>	Theriogenology (Vocational) Clinics IIIB	Management of Theriogenology cases and rounds at an approved facility within the 9 months off campus season, documentation of relevant cases in designated logbook and endorsement by supervising veterinarian. Minimum of 8 hrs/week for the duration of the vocation.	2 (0-2)
	<b>THG 841</b>	Artificial Insemination Technology	AI & diseases control, Semen collection and processing, Breeding soundness evaluation	1
	<b>THG 842</b>	Embryo Transfer and Reproductive Biotechnology	Embryo recovery, Embryo evaluation management & transfer, Management of recipient	1
	<b>THG 843</b>	Comparative Reproduction	Reproductive pattern in different species	1

<b>4</b>	<b>THG 844</b>	Herd Health Fertility Management	Infertility in herd health, Nutritional & hormonal imbalances & reproduction, Culture & mapping techniques, Mating & record systems.	1
	<b>SAN 844</b>	Anaesthetic Utilisation in Pregnancy and Parturition	Anaesthetic indications and contraindications in pregnancy. Parenteral, inhalation and local anaesthetic use in pregnancy. Effects of anaesthetic agents/drugs on foetal viability and development. Use of anaesthetics in CS and per-vaginal delivery of foetus.	1
	<b>THG 845</b>	Seminar (Case Reports)	Presentation of a minimum of 2 cases encountered during the on or off campus clinical attachments.	1
	<b>THG 846</b>	Theriogenology Clinics IV A	Management of Theriogenology cases and rounds in a hospital setting, documentation of relevant cases in designated logbook.	2 (0-2)
	<b>THG 847</b>	Theriogenology (Vocational) Clinics IV B	Management of Theriogenology cases and rounds at an approved facility within the 9 months off campus season, documentation of relevant cases in designated logbook and endorsement by supervising veterinarian. Minimum of 8 hrs/week for the duration of the vocation.	2 (0-2)
	<b>THG 848</b>	Maternal/Neonatal/Paediatric Care	Conditions of the dam and foetus. Care of both dam and foetus postpartum.	1
	<b>THG 849</b>	Advanced Andrology	Male reproductive and urologic disorders. Infectious/inflammatory conditions e.g. balanitis; congenital disorders such as cryptorchidism, epi and hypospadias; erectile dysfunction, penile fracture; penile neoplasm and testicular torsion.	1
<b>5</b>	<b>THG 851</b>	Project (proposal, write-up, defense) (1-3-2)	Conduct, documentation and presentation of an approved relevant clinical research project.	6
	<b>THG 852</b>	Conference Presentation/Publications	Attendance and paper presentation at a major professional conference OR publication of a relevant scientific article in a referred journal.	2
	<b>THG 853</b>	Theriogenology Clinics V A	Management of Theriogenology cases and rounds in a hospital setting, documentation of relevant cases in designated logbook.	2 (0-2)
		<b>TOTAL</b>		<b>31</b>

**Table 5.4: COURSE STRUCTURE FOR SURGERY FELLOWSHIP PART I PROGRAMME**

Year of Study	Course Code	Course Title	Course Description	Credit Units
<b>1</b>	<b>SGS 811</b>	Surgical Principles	Pre-op patient evaluation, pre-op cleaning, shaving, draping and administration of medications. Surgical team preparation.  -Surgical facility design, equipment and maintenance. Instrumentation. Sterilisation and disinfection of surgical materials. Preparation and storage of linen and instrument packs. Preparation of the operative site. Preparation of the surgical team. Aseptic technique.  -Laparotomy incisions, other surgical incisions, haemostasis, dissections, suction and drainage	1 (1-1)
	<b>SGS 812</b>	Trauma and Traumatic Conditions	Traumatic conditions of the soft and skeletal tissues.	1
	<b>SAN 811</b>	General Anaesthetic Induction, Maintenance, Complications & Intensive Care;	-General anaesthetic agents, indications and administration, anaesthetic complications and Euthanasia - Emergency and critical conditions, resuscitation, nutritional support, Cardiopulmonary support, fluid therapy, physical therapy	2
	<b>SAN 813</b>	Local Anaesthesia in Large Animals	Local anaesthetic protocols such as spinal blocks, regional blocks, infiltration, 'inverted L' blocks, corneal blocks etc.	1
	<b>ANA 811</b>	Surgical Anatomy of Large & Small Animals	-Gross anatomy, incision landmarks, approaches to abdominal cavity, thoracic cavity and skeletal structures in Small Animals  -Gross anatomy, incision landmarks, approaches to abdominal and pelvic cavity in Large Animals.	2 (1-1)
	<b>SGS 814</b>	General Surgery Clinics IA	Management of Surgical cases and rounds in a hospital setting, documentation of relevant cases in designated logbook.	2 (0-2)
	<b>SGS 812</b>	General Surgery (Vocational) Clinics IB	Management of Surgical cases and rounds at an approved facility within the 9 months off	2 (0-2)



			campus season, documentation of relevant cases in designated logbook and endorsement by supervising veterinarian.	
	<b>SGS 813</b>	Clinical Procedures I	Learning basic techniques necessary for successful clinical practice, documentation and endorsement of procedures successfully performed.	3 (0-3)
<b>2</b>	<b>SLA 821</b>	Large Animal Surgery	-Basic surgeries of the oral cavity, oesophagus, rumen, intestines and the uterus.  -Surgical procedures of the integument and associated structures e.g. hoof and horns.	2
	<b>SLA 823</b>	Large Animal Lameness	Lameness conditions in large Animals, conformation, gait and stance abnormalities	1
	<b>SSA 822</b>	Small Animal Surgery	Skeletal conditions in Small Animals e.g. fractures, dislocations.  Surgical conditions of soft tissues such as the GIT, genitor-urinary system, integument, eye and ears	2
	<b>SAN 821</b>	Sedation, tranquilisation and muscle relaxation	Principles of sedation, tranquilisation and muscle relaxation in Small, Large and Exotic species. Agents available and their administration.	1
	<b>SDI 822</b>	Introductory Diagnostic Imaging	Radiographic, MUS instrumentation, techniques in diagnostic imaging	1
	<b>SGS 821</b>	General Surgical Clinics IIA	Management of Surgical cases and rounds in a hospital setting, documentation of relevant cases in designated logbook.	2 (0-2)
	<b>SGS 822</b>	General Surgical (Vocational) Clinics IIB	Management of Surgical cases and rounds at an approved facility within the 9 months off campus season, documentation of relevant cases in designated logbook and endorsement by supervising veterinarian.	2 (0-2)
	<b>SGS 824</b>	Clinical procedures II	Learning advanced techniques necessary for successful clinical practice, documentation and endorsement of procedures successfully performed.	3 (0-3)

	<b>SGS 822</b>	Seminar II (Case Reports)	Presentation of a minimum of 2 cases encountered during the on or off campus clinical attachments.	1
	<b>SLA 821</b>	Large Animal Wet labs	Selected Surgical exercises in Large Animals	2 (0-2)
	<b>SSA 822</b>	Small Animal Wet labs	Selected Surgical exercises in Small Animals	2 (0-2)
		<b>TOTAL</b>		<b>26</b>

Table 5.5: COURSE STRUCTURE FOR SURGERY FELLOWSHIP PART II (LARGE ANIMAL SURGERY OPTION) PROGRAMME

Year of Study	Course Code	Course Title	Course Description	Credit Units
<b>3</b>	<b>SAN 832</b>	Anaesthetic and Intensive Care	<p>-Concepts in animal pain. Physiological and pharmacological principles of pain control. Pain recognition and scoring in different species. Pre-emptive and multimodal analgesia. Acute pain management. Chronic pain management. Adjuncts to pain control.</p> <p>-Indications for fluid therapy, selection of fluid, determination of volume and speed of administration, complications of administration.</p> <p>- Airway maintenance. Oxygen supplementation. Artificial ventilation. Fluid therapy. Thermoregulatory control. Analgesia. Nutritional support. Physical therapy.</p> <p>- Accidents to personnel and the patient. Respiratory emergencies. Cardiovascular emergencies. Cardiopulmonary arrest and resuscitation.</p>	3
	<b>SAN 835</b>	Large Animal General Anaesthesia	Injectable anaesthetic agents. Methods of administration. Inhalant anaesthetic agents. Uptake and distribution.	1
	<b>SLA 831</b>	Large Animal Lameness	Lameness conditions in Large Animals especially horses. Diagnostic workup and surgical management of conditions.	1
	<b>SGS 834</b>	Prosthesis in Veterinary Practice	Indications and types of prosthesis. Preparation and techniques of application. Limb prosthesis, eye and beak prosthesis etc.	1
	<b>SLA 832</b>	Experimental and Abdominal Surgeries	<p>-Selected advanced large animal surgical techniques. Indications, instrumentation and complications associated with these procedures.</p> <p>-Surgical conditions and procedures in the abdominal cavity, GI structures, the vulva, vagina, uterus and ovaries</p>	2 (1-1)
	<b>SLA 833</b>	Large Animal Surgery Clinics 1A	Management of Large Animal surgical cases in a hospital setting, documentation of relevant cases in designated logbook.	2(0-2)
	<b>SLA 834</b>	LAS (Vocational) Clinics IB	Management of Large Animal surgical cases at an approved facility within the 9 months off campus season, documentation of relevant cases in designated logbook and endorsement by	2(0-2)

			supervising veterinarian. Minimum of 8 hrs/week for the duration of the vocation.	
<b>4</b>	<b>SGS 841</b>	Miscellaneous, Endoscopy and Laparoscopic Surgeries	- Management of some general conditions such as herniorrhaphy, Laryngeal ventriculotomy, wounds etc.  -Indications, pre-op care, anaesthesia, anatomy, approach, procedure, post-op care and complications of selected endoscopic and laparoscopic protocols. Gastroscopy, laryngoscopy, enteroscopy, tracheoscopy/bronchoscopy, abdominal laparoscopy.	2
	<b>SAN 842</b>	Avian, Wildlife and Exotic Animal Surgeries	Indications, preop care, anaesthesia, anatomy, approach, procedure, postop care and complications surgical conditions in Avian, Wildlife and exotic species (pet reptiles etc).	1
	<b>SDI 845</b>	Labs in Image Interpretation	Evaluation and interpretation of relevant radiographs. Appropriate documentation of findings.	1 (0-1)
	<b>ANA 841</b>	Equine Surgical Anatomy	Anatomic review of food animal and the equine.	1
	<b>SLA 846</b>	Large Animal Surgery Clinics IIA	Management of Large Animal surgical cases in a hospital setting, documentation of relevant cases in designated logbook.	2(0-2)
	<b>SLA 847</b>	LAS (Vocational) Clinics IIB	Management of Large Animal surgical cases at an approved facility within the 9 months off campus season, documentation of relevant cases in designated logbook and endorsement by supervising veterinarian. Minimum of 8 hrs/week for the duration of the vocation.	2(0-2)
	<b>SLA 848</b>	Seminar (Case Reports)	Presentation of a minimum of 2 cases encountered during the on or off campus clinical attachments.	1
	<b>SLA 849</b>	Large Animal Surgical Labs	Surgical exercises in selected but challenging surgical procedures in the equine and ruminant species.	2(0-2)
<b>5</b>	<b>SLA 851</b>	Project (proposal, write-up, defense) (1-3-2)	Conduct, documentation and presentation of an approved relevant clinical research project.	6
	<b>SLA 852</b>	Conference Presentation/Publications	Attendance and paper presentation at a major professional conference OR publication of a relevant scientific article in a referred journal.	2
	<b>SLA 853</b>	Large Animal Surgery Clinics IIIA	Management of Large Animal surgical cases in a hospital setting, documentation of relevant cases in designated logbook.	2(0-2)
		<b>TOTAL</b>		<b>34</b>

**Table 5.6: COURSE STRUCTURE FOR THE SURGERY FELLOWSHIP (SMALL ANIMAL SURGERY OPTION) PROGRAMME**

Year of Study	Course Code	Course Title	Course Description	Credit Units
<b>3</b>	<b>SAN 832</b>	Anaesthetic and Intensive Care	<p>-Concepts in animal pain. Physiological and pharmacological principles of pain control. Pain recognition and scoring in different species. Pre-emptive and multimodal analgesia. Acute pain management. Chronic pain management. Adjuncts to pain control.</p> <p>-Indications for fluid therapy, selection of fluid, determination of volume and speed of administration, complications of administration.</p> <p>- Airway maintenance. Oxygen supplementation. Artificial ventilation. Fluid therapy. Thermoregulatory control. Analgesia. Nutritional support. Physical therapy.</p> <p>- Accidents to personnel and the patient. Respiratory emergencies. Cardiovascular emergencies. Cardiopulmonary arrest and resuscitation.</p> <p>- Intensive care for Small and Large animals. Life support and resuscitation</p>	2
	<b>SGS 831</b>	Surgical biology and physiology	Body's response to injury. Haemostasis, shock, infection. Wound healing, Micro & macrophysiologic response to surgery,	1
	<b>SSA 832</b>	Abdominal and Miscellaneous Small Animal Surgeries	<p>-Surgical conditions of the muscle, ligaments and tendons. Surgical management of these conditions. Complications associated with these conditions.</p> <p>- Surgical conditions and procedures in the abdominal cavity such as the GI and accessory organs as well as the reproductive organs especially the vulva, vagina, uterus and ovaries.</p> <p>-Indications, pre-op care, anaesthesia, anatomy, approach, procedure, post-op care and complications of kidney, heart and other transplants. Limb reattachment procedures</p>	2

			<p>-Indications for plastic and reconstructive surgical procedures. Tension-relieving techniques. Skin flaps. Axial pattern flaps. Myocutaneous and muscle flaps. Skin grafts. Mesh skin grafts. Free skin flaps transfer. Tissue expanders.</p> <p>- Indications, pre-op care, anaesthesia, anatomy, approach, procedure, post-op care and complications of ear surgeries.</p> <p>- Management of some general conditions such as herniorrhaphy, Laryngeal ventriculotomy, wounds etc.</p>	
<b>SSA 835</b>	Cardiothoracic Surgery		Indications, preop care, anaesthesia, anatomy, approach, procedure, postop care and complications of thoracotomy, pulmonary lobectomy, thoracic esophageal surgeries, open heart surgeries, vascular surgeries and diaphragmatic ruptures.	1
<b>SSA 836</b>	Advanced Orthopaedic Surgeries		Indications, preop care, anaesthesia, anatomy, approach, procedure, postop care and complications of fractures, dislocations/luxations. Congenital and metabolic bone conditions. Limb lengthening, Bone transplants.	1
<b>SGS 834</b>	Prosthesis in Veterinary Surgery		Indications and types of prosthesis. Preparation and techniques of application. Limb prosthesis, eye and beak prosthesis etc.	1
<b>SAN 836</b>	Local Anaesthesia in Small Animals		Forms of local anaesthesia used in Small Animals, agents, indications and limitations.	1
<b>SDI 833</b>	Small Animal Thoracic and Abdominal Radiography		Indications, preparations, positioning for radiography of the thoraco abdominal walls, heart, lungs, diaphragm, GI, kidneys, ureter, bladder and urethra. Abdominal and thoracic cavities.	1
<b>SSA 838</b>	Small Animal Surgery Clinics/Rounds 1A		Management of Small Animal surgical cases in a hospital setting, documentation of relevant cases in designated logbook.	2(0-2)
<b>SSA 839</b>	SAS (Vocational) Clinics IB		Management of Small Animal surgical cases at an approved facility within the 9 months off campus season, documentation of relevant cases in designated logbook and endorsement by supervising veterinarian. Minimum of 8 hrs/week for the duration of the vocation.	2(0-2)

<b>4</b>	<b>SGS 841</b>	Endoscopy/Laparoscopic Surgeries, Cryo, Thermo and Lasers in Surgery and Surgical Robotics	-Indications, pre-op care, anaesthesia, anatomy, approach, procedure, postop care and complications of selected endoscopic and laparoscopic protocols. Gastroscopy, laryngoscopy, enteroscopy, tracheoscopy/bronchoscopy, abdominal laparoscopy.  - Indications, technique and complications of cryosurgery, thermo surgery as well as lasers in modern surgeries. Indications and techniques for the use of robots in direct and remote surgeries.	2
	<b>SSA 842</b>	Ophthalmic, Oro-Dental and CNS Care and Surgery	-Indications, pre-op care, anaesthesia, anatomy, approach, procedure, postop care and complications of Surgical conditions of the dentition, palate, tongue and pharynx.  -Indications, pre-op care, anaesthesia, anatomy, approach, procedure, post-op care and complications of congenital or traumatic spinal conditions. Cranial fractures and brain surgeries such as tumours, intracranial haemorrhage, cysts etc.  -Indications, pre-op care, anaesthesia, anatomy, approach, procedure, post-op care and complications of ophthalmic surgical conditions such as cataract, glaucoma, retinal detachment and ocular prosthesis	2
	<b>SGS 843</b>	Avian, Wildlife and Exotic Animal Surgeries	Indications, preop care, anaesthesia, anatomy, approach, procedure, postop care and complications surgical conditions in Avian, Wildlife and exotic species (pet reptiles etc).	1
	<b>SSA 824</b>	Small Animal Surgical Labs	Surgical exercises in selected challenging operative procedures such as limb reattachments, cranial and open heart surgeries, vascular surgeries and reconstructive surgeries.	2(0-2)
	<b>SSA 846</b>	Surgical Oncology	Principles of tumour biology and staging. Paraneoplastic syndromes. General approach to the cancer patient. Principles of oncologic surgery, chemotherapy and radiotherapy. Management of common canine and feline neoplasms. Oncologic emergencies.	1
	<b>SDI 845</b>	Labs in Image Interpretation	Evaluation and interpretation of relevant radiographs and sonographs. Appropriate documentation of findings.	1(0-1)

	<b>SSA 847</b>	Seminar (Case Reports) II	Presentation of a minimum of 2 cases encountered during the on or off campus clinical attachments.	1
	<b>SSA 848</b>	Small Animal Surgery Clinics IIA	Management of Small Animal surgical cases in a hospital setting, documentation of relevant cases in designated logbook.	2(0-2)
	<b>SSA 849</b>	SAS (Vocational) Clinics IIB	Management of Small Animal surgical cases at an approved facility within the 9 months off campus season, documentation of relevant cases in designated logbook and endorsement by supervising veterinarian. Minimum of 8 hrs/week for the duration of the vocation.	2(0-2)
<b>5</b>	<b>SSA 851</b>	Project (proposal, write-up, defense) (1-3-2)	Conduct, documentation and presentation of an approved relevant clinical research project.	6
	<b>SSA 852</b>	Conference Presentation/Publications	Attendance and paper presentation at a major professional conference OR publication of a relevant scientific article in a referred journal.	2
	<b>SSA 853</b>	Small Animal Surgery Clinics IIIA	Management of Small Animal surgical cases in a hospital setting, documentation of relevant cases in designated logbook.	2(0-2)
		<b>TOTAL</b>		<b>38</b>



Table 5.7: COURSE STRUCTURE FOR THE SURGERY FELLOWSHIP (ANAESTHESIOLOGY OPTION) PROGRAMME

Year of Study	Course Code	Course Title	Course Description	Credit Units
<b>3</b>	<b>SAN 832</b>	Anaesthetic and Intensive Care	<p>-Concepts in animal pain. Physiological and pharmacological principles of pain control. Pain recognition and scoring in different species. Pre-emptive and multimodal analgesia. Acute pain management. Chronic pain management. Adjuncts to pain control.</p> <p>-Indications for fluid therapy, selection of fluid, determination of volume and speed of administration, complications of administration.</p> <p>- Airway maintenance. Oxygen supplementation. Artificial ventilation. Fluid therapy. Thermoregulatory control. Analgesia. Nutritional support. Physical therapy.</p> <p>- Accidents to personnel and the patient. Respiratory emergencies. Cardiovascular emergencies. Cardiopulmonary arrest and resuscitation.</p> <p>- Intensive care for Small and Large animals. Life support and resuscitation</p>	3
	<b>SGS 833</b>	Anaesthetic Physiology and Pharmacology	The cell. Body fluids. The blood. Cardiovascular system. Respiratory system. Nervous system. Endocrines. The liver. The kidney. Mechanisms of drug action. Pharmacokinetics. Pharmacodynamics. Sedatives. Analgesics. Injectable anaesthetics. Inhalant anaesthetics. Muscle relaxants. Local anaesthetics.	2
	<b>SAN 833</b>	Anaesthetic Instrumentation and procedures	<p>Equipment assembly and checks. Patient evaluation for anaesthetic fitness. Preanaesthetic medication. Intravenous access. Induction of anaesthesia. Endotracheal intubation. Maintenance of anaesthesia. Monitoring anaesthesia. Recovery from anaesthesia. Records.</p> <p>- Anaesthetic administration and monitoring equipment. Installation and operations, maintenance of anaesthetic equipment</p>	2(1-1)
	<b>SAN 834</b>	Anaesthesia for Diagnostic Imaging.	Sedation or anaesthetic use in Small Animal and Equine Diagnostic Imaging procedures.	1
	<b>SAN 835</b>	Large Animal General Anaesthesia	Injectable anaesthetic agents. Methods of administration. Inhalant anaesthetic agents. Uptake and distribution.	1

	<b>SAN 836</b>	Local Anaesthesia in Small Animals	Forms of local anaesthesia used in Small Animals, agents, indications and limitations.	1
	<b>SAN 837</b>	Anaesthesia Clinics/Rounds IA	Management of Anaesthetized patients cases in a hospital setting, documentation of relevant cases in designated logbook.	2(0-2)
	<b>SAN 838</b>	Anaesthesia (Vocational) Clinics IB	Management of Anaesthetized patients at an approved facility within the 9 months off campus season, documentation of relevant cases in designated logbook and endorsement by supervising veterinarian. Minimum of 8 hrs/week for the duration of the vocation.	2(0-2)
<b>4</b>	<b>SAN 841</b>	Special Anaesthetic Considerations	<p>Anaesthesia in Cardiac disease, Respiratory disease, Hepatic disease, Renal disease, Neurological disease, Trauma, Diabetes, Hyper/hypoadrenocortism, Pheochromatoma, Gastric dilatation-volvulus, Hyperthyroidism, Malignant hyperthermia, Obesity, Paediatrics, Thoracic Surgeries, Geriatrics, Brachycephalic breeds and Sight hounds.</p> <p>- Anaesthetic indications and contraindications in pregnancy. Parenteral, inhalation and local anaesthetic use in pregnancy. Effects of anaesthetic agents/drugs on foetal viability and development. Use of anaesthetics in CS and per-vaginal delivery of foetus</p> <p>- Concepts and indications for euthanasia, Agents and techniques. Legal framework for euthanasia.</p>	2
	<b>SAN 842</b>	Anaesthesia in Wildlife, Exotics, Aquatics and Avian Species	Laboratory animal anaesthesia. Avian anaesthesia. Fish anaesthesia. Reptile anaesthesia. Wildlife anaesthesia.	1
	<b>SAN 845</b>	Seminar (Case Reports)	Presentation of a minimum of 2 cases encountered during the on or off campus clinical attachments.	1
	<b>SAN 846</b>	Anaesthesia Clinics/Rounds IIA	Management of Anaesthetized patients cases in a hospital setting, documentation of relevant cases in designated logbook.	2(0-2)
	<b>SAN 847</b>	Anaesthesia (Vocational) Clinics IIB	Management of Anaesthetized patients at an approved facility within the 9 months off campus season, documentation of relevant cases in designated logbook and endorsement by supervising veterinarian. Minimum of 8 hrs/week for the duration of the vocation.	2(0-2)
	<b>SAN 851</b>	Project (proposal, write-up, defense) (1-3-2)	Conduct, documentation and presentation of an approved relevant clinical research project.	6

<b>5</b>	<b>SAN 852</b>	Conference Presentation/Publications	Attendance and paper presentation at a major professional conference OR publication of a relevant scientific article in a referred journal.	2
	<b>SAN 853</b>	Anaesthesia Clinics IIIA	Management of Anaesthetized patients cases in a hospital setting, documentation of relevant cases in designated logbook.	2(0-2)
		<b>TOTAL</b>		<b>32</b>

Table 5.8: COURSE STRUCTURE FOR THE SURGERY FELLOWSHIP (DIAGNOSTIC IMAGING OPTION) PROGRAMME

Year of Study	Course Code	Course Title	Course Description	Credit Units
<b>3</b>	<b>SAN 834</b>	Anaesthesia in Diagnostic Imaging	Indications for and use of sedatives, muscle relaxants or anaesthetics in diagnostic imaging protocols	1
	<b>ANA 834</b>	Veterinary Radiographic Anatomy	Normal radiographic anatomy of the skeletal and thoraco-abdominal organs in dogs and the limbs, cranium and cervical vertebrae in horses	1
	<b>SDI 831</b>	Diagnostic Imaging Equipment/Instrumentation	X-ray facility and equipment. Design and types of x-ray machines. Production and properties of x-rays. Scattered radiation. Radiation safety. Positioning and standard projections. Recording the radiographic image. Film processing. Assessing radiographic quality. Radiographic interpretation. Digital and Teleradiography.  -MUS, CT and MRI machines –types and capabilities.  - Maintenance, cleaning and storage of machines. Regulation of use and servicing. Signs of malfunction etc.	3
	<b>SDI 832</b>	Diagnostic Imaging in Pregnancy Evaluation	Use of radiography and Ultrasonography in pregnancy diagnosis and foetal viability assessment in Small and Large Animals.	2(1-1)
	<b>SDI 833</b>	Small Animal Thoracic and Abdominal Radiography	Indications, preparations, positioning for radiography of the thoraco abdominal walls, heart, lungs, diaphragm, GI, kidneys, ureter, bladder and urethra. Abdominal and thoracic cavities.	1
	<b>SDI 834</b>	Radiation Biology and Regulatory Protocols	- Effects of radiation on living tissues and organism, radiation protection and amelioration of damage. Techniques and equipment in radio-protection. Patient and personnel protection.  -Local, state, national and universal regulations of radiation producing devices. Protocols and declarations in radiation and nuclear control. Disposal of radiation equipment.	2
	<b>SDI 835</b>	MUS, CT and MRI	Concepts, techniques and indications for the use of Medical ultrasonography, Computerised Tomography and Magnetic Resonance Imaging.	1
	<b>SDI 838</b>	Radiology Clinics IA	A case-method of instruction in diagnostic imaging in the hospital environment. Film reading	2(0-2)

	<b>SDI 839</b>	Radiology (Vocational) Clinics IB	Diagnostic imaging services at an approved facility within the 9 months off campus season, documentation of relevant cases in designated logbook and endorsement by supervising veterinarian. Minimum of 8 hrs/week for the duration of the vocation.	2(0-2)
<b>4</b>	<b>SDI 841</b>	Fundamentals of Nuclear Medicine & Radiotherapy	-Instrumentation, indications, Principles and application of nuclear medicine.  -Instrumentation, indications, Principles, Techniques and utilization of radiotherapy	2
	<b>SDI 843</b>	Technique Chart Development and Utilisation	Technique chart development and utilization for canine and equine species.	1
	<b>SDI 844</b>	Contrast Materials in Diagnostic Imaging	Types of contrast media. Barium swallows. Barium meal and follow through. Barium enema. Peritoneography. Sialography. Intravenous urography. Cystogram. Male urethrogram. Female urethrogram. Myelogram. Discography. Anthrography. Sinography.  - Radiographic evaluation of the cranium, brain, spinal canal and contents.	1
	<b>SDI 845</b>	Labs in Image Interpretation	Evaluation and interpretation of relevant radiographs and sonographs. Appropriate documentation of findings.	1(0-1)
	<b>SDI 846</b>	Seminar (Case Reports)	Presentation of a minimum of 2 cases encountered during the on or off campus clinical attachments.	1
	<b>SDI 847</b>	Radiology Clinics IIA	A case-method of instruction in diagnostic imaging in the hospital environment. Film reading	2(0-2)
	<b>SDI 848</b>	Radiology (Vocational) Clinics IIB	Diagnostic imaging services at an approved facility within the 9 months off campus season, documentation of relevant cases in designated logbook and endorsement by supervising veterinarian. Minimum of 8 hrs/week for the duration of the vocation.	2(0-2)
	<b>SDI 842</b>	Nuclear Imaging and Thermography	Concepts, techniques and indications for the use of Nuclear Imaging and Thermography	1
	<b>SDI 851</b>	Project (proposal, write-up, defense) (1-3-2)	Conduct, documentation and presentation of an approved relevant clinical research project.	6
<b>SDI 852</b>	Conference Presentation/Publications	Attendance and paper presentation at a major professional conference OR publication of a relevant scientific article in a referred journal.	2	

<b>5</b>	<b>SDI 853</b>	Diagnostic Imaging Clinics IIIA	A case-method of instruction in diagnostic imaging in the hospital environment. Film reading	2(0-2)
		<b>TOTAL</b>		<b>36</b>