COLLEGE OF VETERINARY SURGEONS NIGERIA

STUDENTS HANDBOOK

PATHOLOGY FACULTY

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PATHOLOGY FACULTY

STUDENTS HANDBOOK

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ACKNOWLEDGEMENT

We acknowledge the opportunity given to members of the Interim Management Committee by the Board of the Veterinary Council of Nigeria to implement the recommendations of the Prof. J.D. Amin led Committee on the review of the College of Veterinary Surgeons Nigeria. The President of the Council AIG. Aisha A. Bajju has particularly been very helpful in assisting the IMC in its activities. We also acknowledge the support received from the Ag. Registrar Dr. Fadipe who has made himself available to attend our virtual meetings as well as attend to our issues.

Progress in reforming the College would not have been possible without the wonderful support and participation of our Veterinary Teaching Hospital Directors, Study Centre Supervisors as well as the Specialty Coordinators.

Zoaka A. Hassan
(Ag. Provost)

FORWORD
(Ag. Head of Faculty)

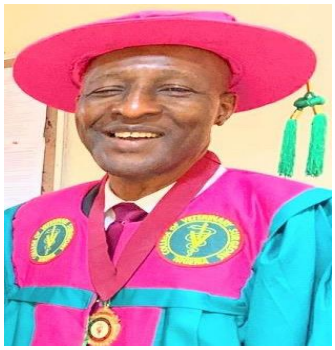
COLLEGE MANAGEMENT

Prof. Zoaka A. HASSAN FCVSN
IMC Chairman & Ag. Provost

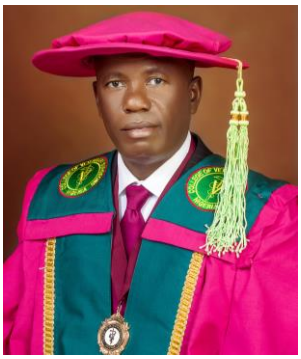
Prof. Joseph F. AKINRINMADE FCVSN
Ag. Head, Surgery Faculty

Prof. Ekene EZENDUKA FCVSN
Ag. Head, Public Health &
Preventive Medicine Faculty

Prof. Joseph O. Ayo FCVSN
Ag. Head, Medicine Faculty



Dr. O. ABIADE FCVSN
IMC Member



Dr. David EHIZOBOLO FCVSN
Ag. Head, Pathology Faculty

Dr. Helen OPUTA FCVSN
Ag. College Secretary

Mr. Audu LOHVANG WOZIMS
College Administrative Officer

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PART 1

GENERAL INFORMATION

1.1 BRIEF HISTORY OF THE VETERINARY PROFESSION

The Veterinary profession in its present modern form can be traced back to the first Veterinary College in Lyon, France established in the year 1762. The record has it that once it was created it was known to provide scientific and professional training for comparative medicine. Hence, many ministries of Health in Europe started sending their human doctors to study the 'new medicine'. The idea is that medicine is one – human and animal; but that Veterinary Medicine is comparative medicine, more comprehensive and more demanding of efforts and resources. Veterinary Medicine is also capable of satisfying both social and economic needs of human society, through animal and human health protection, determination of animal welfare needs, promotion of human practices and unique contribution of essential knowledge for the maintenance of environmental sanitation and sanity in civilized human communities.

In Nigeria however, the first British/colonial Veterinary Surgeons started operating modern veterinary practice and giving essential services about the time the First World War began in 1914. Their mandate was not just the promotion of animal health, but also the practice of systematic animal husbandry for the production of food of animal origin, especially meat, milk and other dairy products for human consumption in war time Nigeria. By 1948, a school for the training of professional Veterinary Surgeons was established in Vom in the present Plateau State of the country. Twelve (12), Veterinary Faculties have so far been established between the mid-1960_s to date in the country. They are located in the University of Ibadan, Ibadan; Ahmadu Bello University, Zaria; University of Nigeria, Nsukka; University of Maiduguri, Maiduguri; Usmanu Danfodiyo University, Sokoto; University of Abuja, University of Ilorin, University of Jos, University of Benin, Universities of Agriculture of Makurdi, Abeokuta and Umudike, Abubakar Tafawa Balewa University Bauchi as well as Bayero University Kano. However, considering that the programmes in these faculties basically constitute an academically inclined approach to the professional curriculum, it has become necessary to start a more professionally structured postgraduate programme in Nigeria as in other leading countries of the world.

1.2 GENERAL ADMISSION REQUIREMENTS

1.2.1. To be admitted into the Fellowship of the College in any Specialty/Option of Faculty:

i. The candidate must hold a Doctor of Veterinary Medicine (DVM) degree or its equivalent recognized by the Veterinary Council of Nigeria (VCN).

ii. The candidate must be registered with the VCN for the purpose of practicing Veterinary Medicine in Nigeria

iii. The candidate must have flair in the area of interest as evidenced by his/her score in the subject area during the DVM training or post-DVM professional experience.

iv. The candidate must have had at least 3 years Council registration.

v. Additional qualifications in relevant areas may be an added advantage. Each Faculty

shall determine the extent of such advantage especially in terms of courses to be covered.

vi. The candidate must submit an NYSC certificate or evidence of exemption.

vii. Any Faculty may identify peculiar additional criteria appropriate to that Faculty.

viii. Candidates must present transcript of academic performance adjudged suitable for admission into comparable postgraduate or similar professional programmes.

ix. Candidate must be recommended by at least two Fellows of the College, who shall attest to the candidate's professional experience and conduct.

1.2.2 To be admitted directly into the third year of the Fellowship programme of the College, the candidate must have, in addition, a postgraduate degree or an equivalent qualification in the relevant Faculty.

1.3 AWARD OF COLLEGE FELLOWSHIP POSTGRADUATE DIPLOMA

For consideration of the award of a Postgraduate Fellowship Diploma, the candidate must satisfy all academic requirements prescribed by the College.

1.3.1 Regular Fellowship:

This Fellowship is awarded to Residents who have undergone the mandatory College tutelage as outlined in the College prospectus.

1.3.2 Discretionary Fellowship:

The College may, on the recommendation of the Senate, award Discretionary Fellowship Diploma, to Senior Veterinarians such as Professors of at least 15 years; Chief Veterinary Officer of the Federation, Registrar of the Veterinary Council and State Directors of Veterinary Services who have contributed to the development of the College and Veterinary Medicine, and subject to fulfilling conditions to be set by the Senate.

1.3.3 Honorary Fellowship:

The College may, on the recommendation of the Senate award Honorary Fellowship (Honoris causa) to persons of distinction in academia or the Community, who are not Veterinary Surgeons but have contributed significantly to the development of Veterinary Medicine

The holder of a Diploma awarded by the College shall be entitled to the status of a: -

(a) Fellow, in the Specialty

(b) Consultant, in the Specialty

Certificate of Postgraduate Fellowship Diploma of the College, shall be as prescribed by the Board and shall bear the seal of the College signatures of the Provost, the Secretary and date.

1.4 TRAINING AND EXAMINATION

1.4.1 Duration of Training

The minimum duration before enrolment for the Fellowship training is 3 years post-DVM qualification. All programmes are to run on part-time basis, provided the mandatory course Credit Units as specified by each Faculty are met. The minimum and maximum periods for the training of Fellowship is 5 and 8 years, respectively.

1.4.2 Examinations

Examinations are to be administered at the end of each year of the programme.

(a) Each examination shall consist of written, oral and practical components as appropriate.

(b) All examinations shall be unified but venues decentralised.

(c) There shall be an oral PowerPoint project presentation based on each Faculty's minimum, prescribed number of case reports, which must be published in recognized journals (preferably institutional or national association journals) by each Resident.

1.4.3 Credit Units

The credit units for the two categories are as follows:

The total credit units for each year of study shall be as prescribed in the prospectus for the corresponding Faculty and Specialty.

1.4.4. Examination Results

(a) For each examination, 50% is a pass mark.

No candidate shall be allowed to attempt any examination for more than three times. Thereafter, such a candidate shall be withdrawn from the programme. For a Resident to remain in the programme, he/she must either register after paying the prescribed fees or obtain a valid deferment.

1.4.5 Other Training Requirements

(a) All candidates for examinations shall produce evidence of participation in the training course certified by their respective supervisors.

(b) In all examination continuous assessment of students should form part of the result and should constitute 30 – 40% of the total score.

1.4.6 Training and Residency

There shall be a compulsory first and second semester period of a minimum of twelve weeks each, every academic session. The Clinic activity of the Residents shall be documented in a log book signed by the designated supervisor.

The training programme of the College for the Faculties shall comprise of:

a) 12 weeks of virtual (online) facilitation in the first semester.
b) 12 weeks of virtual (online) facilitation in the second semester.
c) 4 weeks on on-campus residency in the Study Centre in September
d) 12 weeks of Clinic activity (min 16hrs weekly) in the first semester at an approved Clinical Training Centre (CTC)
e) 12 weeks of Clinic activity (min 16hrs weekly) in the second semester at an approved Clinical Training Centre (CTC)

1.5 PROGRAMME ADMINISTRATION AND EXAMINATION BOARD

1.5.1 Board of Examiners

There shall be a Board of examiners whose members must be Fellows of the Faculty. No College Resident shall be eligible to serve as a Facilitator or examiner. This is without prejudice to the appointment of recognized and professional Consultants in special cases at the discretion of the Faculty.

1.5.2 Supervisory Committee

The Resident will be assigned to a Supervisory Diplomate (Supervisor) in the 4th year of study.
The Supervisor of the candidate shall in accordance with College (CVSN) Senate review or approve guidelines often submit from the respective Faculty panels for consideration and submission to the College Board for its consideration and final determination.

1.5.3 Resident's Mentor

Each Resident shall consult and obtain consent of a Senior Fellow who shall serve as his/her mentor throughout the duration of the study.

The Mentor shall be responsible for monitoring the Resident's training programme based on the curricular objectives, ascertainable experience as well as needs of the candidate. The training programme must be compatible with teaching, clinical and laboratory services, as well as research activities of the Faculty. The proportion of time needed to rotate (where required) through the component areas of training programme shall be determined by the Mentor and Centre Supervisors.

1.5.3 Academic programme Delivery

Online Lectures/Facilitation:

Lectures shall be online on the corresponding Faculty's Teams or Zoom platform. A back-up video class is also available on the College Learning Management system (LMS) serving as a backup.

1.5.3 College Senate

The Senate of the College from time to time shall inspect and determine the status of the facilities and personnel for the College programmes through the evaluation of the submissions and visits by the Senate inspection teams.

1.6 VENUES AND AVAILABLE FACILITIES

1.6.1 General Facilities

(a) Faculties/ Colleges of Veterinary Medicine.
(b) VTH clinical and ambulatory facilities
(c) Diagnostic Laboratory support services including NVRI, Vom.
(d) Selected Government and private veterinary hospitals.
(e) University and government farms
(f) Private livestock and poultry farms
(g) Appropriate teaching and research equipment.

1.6.2 Personnel

(a) Academic Staff who are Fellows of the College.
(b) Fellows of other related disciplines such as Human Medicine
(c) Guest lectures/trainers

1.6.3 Venues:

A. College Central Administration:

The Central administration of the College is currently hosted in the Veterinary Council of Nigeria building. The offices of all Principal Officers of the college are located in the VCN Building.

Activities:

i. Coordination of all College activities.
ii. Management of College finances.
iii. College Secretariate handling all College correspondences.
iv. Central coordination of examinations
v. Central coordination of virtual lectures/facilitation.

vi. Convocation.

B. College Study Centres:

College Study Centres are administrative Centres for the coordination of selected college activities in the various location around the country. There are currently 8 Study Centres as presented in the accompanying table and the Specialties supervised by these Centres. Additional Study Centres may however be approved over time as the need arises.

Activities of each Faculty at the Centre are coordinated by the Faculty Study Centre Supervisor. The Supervisors along with the corresponding VTH Director constitute the Study Centre Management Committee chaired by the VTH Directed and assisted by the Chairman/Chairperson of the Supervisors.

Table 1: Study Centres of the College of Veterinary Surgeons Nigeria (CVSN)

S/No	Study Centre	Faculty	Option/Specialty
1.	**Ahmadu Bello University, Zaria.**	Medicine	Clinical Pharmacology & Toxicology
			Large Animal Medicine
			Small Animal Medicine
			Aquatic, Laboratory Animal & Wildlife Medicine
			Avian Medicine
		Pathology	Clinical Pathology
			Diagnostic Pathology
			Microbiology
			Parasitology
		Public Health & Preventive Medicine	Public Health
			Preventive Medicine
			Food Safety
			Epidemiology
		Surgery	Anaesthesiology
			Diagnostic Imaging
			Large Animal Surgery
			Small Animal Surgery
			Theriogenology
		Medicine	Clinical Pharmacology & Toxicology
			Large Animal Medicine
			Small Animal Medicine
			Avian Medicine

2.	**University of Ibadan, Ibadan**		Aquatic, Laboratory Animal & Wildlife Medicine
		Pathology	Clinical Pathology
			Diagnostic Pathology
			Microbiology
			Parasitology
		Public Health & Preventive Medicine	Public Health
			Preventive Medicine
			Food Safety
			Epidemiology
		Surgery	Anaesthesiology
			Large Animal Surgery
			Small Animal Surgery
			Theriogenology
3.	**University of Nigeria, Nsukka.**	Medicine	Clinical Pharmacology & Toxicology
			Large Animal Medicine
			Small Animal Medicine
			Aquatic, Laboratory Animal & Wildlife Medicine
			Avian Medicine
		Pathology	Clinical Pathology
			Diagnostic Pathology
			Microbiology
			Parasitology
		Public Health & Preventive Medicine	Public Health
			Preventive Medicine
			Food Safety
			Epidemiology
		Surgery	Theriogenology
			Small Animal Surgery
4.	**National Veterinary Research Institute Vom/ University of Jos, Jos**	Medicine	Clinical Pharmacology & Toxicology
			Small Animal Medicine
			Avian Medicine
			Aquatic, Laboratory & Wildlife Medicine
		Pathology	Diagnostic Pathology
			Parasitology
			Microbiology

		Public Health & Preventive Medicine	Public Health
			Food Safety
			Epidemiology
		Surgery	Small Animal Surgery
5.	**University of Maiduguri/SAS Veterinary Hospital, Maiduguri.**	Medicine	Clinical Pharmacology & Toxicology
			Large Animal Medicine
			Aquatic, Laboratory & Wildlife Medicine
			Avian Medicine
		Pathology	Clinical Pathology
			Diagnostic Pathology
			Microbiology
			Parasitology
		Public Health & Preventive Medicine	Public Health
			Food Safety
			Epidemiology
		Surgery	Large Animal Surgery
			Theriogenology
6.	**Usmanu Danfodiyo University, Sokoto/State Veterinary Hospital, Sokoto.**	Medicine	Small Animal Medicine
			Avian Medicine
		Public Health & Preventive Medicine	Public Health
			Preventive Medicine
		Surgery	Small Animal Surgery
			Theriogenology
7.	**University of Abuja, Abuja.**	Medicine	Avian Medicine
			Clinical Pharmacology & Toxicology
		Pathology	Microbiology
			Parasitology
		Public Health & Preventive Medicine	Public Health
			Preventive Medicine

Activities:

i. Registration and documentation of Residents.
ii. Coordination of Clinical training in all Clinical Training Centres being supervised by the said Study Centre.
iii. Coordination of projects of Residents registered in the corresponding Study Centre.
iv. Coordination of local seminars at the Study Centres.
v. Verification, endorsement and scoring Clinic Logbooks.
vi. Coordination of examinations for Residents registered in the Centre.
vii. Coordination and delivery of the September/October Clinic/Practical residency activities on campus.

C. Clinical Training Centres

There are currently over 20 provisionally approved Clinical Training Centres comprising of all accredited Veterinary Teaching Hospital, selected State Veterinary Hospitals as well as selected private practices. Residents are at liberty to undertake part of their Clinical Training in relevant Human Diagnostic/Medical facilities e.g. Diagnostic laboratories, Diagnostic Imaging Centres, MDAs as maybe considered relevant.

Residents domiciled outside Nigeria in the non-practice Specialties may also participate in the College activities, special arrangement for their examination shall be at the expense of the Residents. Evidence of registration to practice in the country of domicile must be provided where a Resident intends to undertake training in any of the practice-based Speciialties.

Activities:

1. Coordination and supervision of Clinical training
2. Endorsement of Clinic Logbooks and Clinic Activity Reports
3. Preparing Residents for examinations

1.7 METHOD OF APPLICATION

College programmes shall be advertised annually, suitably qualified candidates may apply in response to such advertisements. Application forms shall be electronically filled and submitted virtually through the College portal.

Application Procedure:

i. Advertisements shall be made in 2 National dailies within which all applicants shall be referred to the College Application portal.
ii. Applicants are to fill the Application Forms online and submit.

iii. Scanned copies of all credentials are to be attached

iv. The application fee is to be paid into the College TSA account as provided from time to time.

v. Once payment has been verified, Application forms shall be forwarded to the corresponding Head of Faculty for consideration of the Faculty Admission Committee.

vi. If approved, an Admission letter is autogenerated and sent to the applicant.

vii. The applicant is to pay the necessary registration fee (half or in full).

viii. After verification of fee payment, details of the applicant are uploaded onto the LMS where he/she can access posted contents as well as autogenerate an examination slip without which the Resident would be denied access to examination venues/absent on the CBT portal for the examinations.

1.8 COURSE APPLICATION FEES/CHARGES.

As would be stated in the advertisement, but would be subject to changes periodically. For now, the fees are as follows

(a). Application Fee	=	₦25,000.00
(b). Tuition Fees (Annually)	=	₦200,000.00
(c) Examination Fees (Annually)	=	₦70,000.00
(d) Resit examination	=	₦30,000.00

Note:

- Candidates shall be responsible for their transport, accommodation and feeding.
- These fees are subject to periodic review

1.9 ADMINISTRATION AND MANAGEMENT OF THE COLLEGE

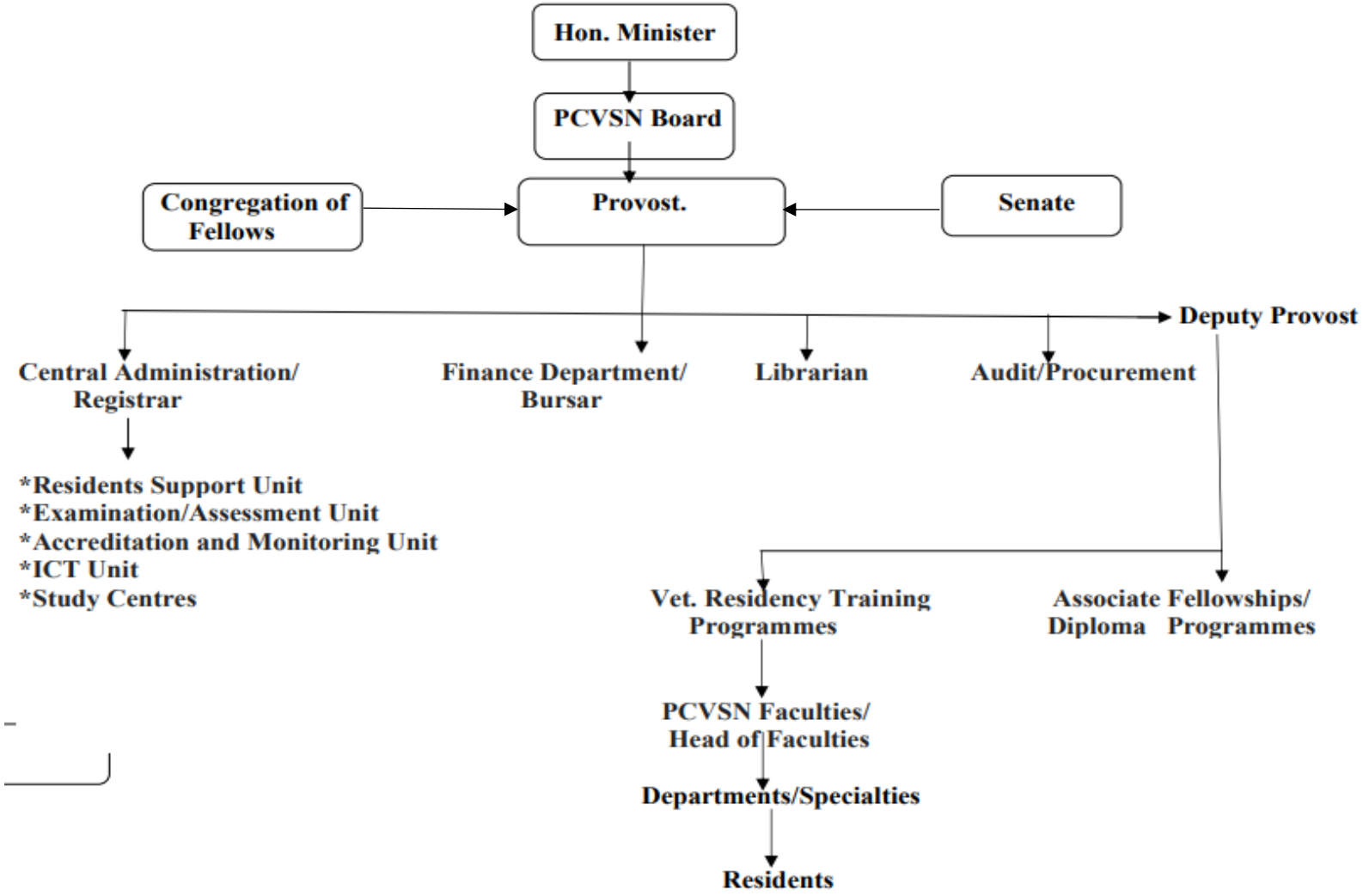
The Veterinary Council of Nigeria, for now, remains the financier and coordinating government agency for the College. There is at the moment for the purpose of directly administering the College Programmes an Interim Management Committee, an Interim College Senate, Faculty Academic Board as well as an Ag. Provost and Ag. Heads of Faculties. The Secretariat of the College is being overseen by the College Secretary and an Administrative Officer.

The administrative and management structure of the College consists of the following:

(a) College Board
(b) College Senate
(c) Congregation of Fellows
(d) College Management

The academic and professional activities of the College shall be supervised by the Senate. The College Board shall be responsible and accountable to the Hon. Minister of Agriculture. An organogram of the College is presented in the accompanying figure.

PROPOSED PCVSN ORGANOGRAM



ANNUAL 2024 PLANNER/SCHEDULE OF CVSN ACADEMIC ACTIVITIES

S/No			2024 SESSION											
	ACTIVITY	DURATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
1	Interim Board Meeting	1 Dy												
2	Admission & Registration	8 Wks												
3	Virtual Orientation	1 Dy												
4	Virtual Lectures Semester 1	12Wks												
5	Semester 1 Clinics	12 Wks												
6	Semester 1 Break	2 Wks												
7	Virtual Lectures Semester II	12 Wks												
8	Semester 2 Clinics	12 Wks												
9	Semester 2 Break	2 Wks												
10	Study Centre September Residency	4 Wks												
11	Revision/Exams	2 Wks												
12	Resit Exams	1Wk												

KEY

1- 17/01/24
2- 20/01 – 28/02/24
3- 12/02/24
4- 13/02 – 10/05/24
5- 13/02 – 10/05/24
6- 13/05 – 26/05/24
7- 27/05 – 16/08/24
8- 27/05 – 16/08/24
9- 18/08 – 31/08/24
10- 02/09 – 27/09/24
11- 07/10; 14/10 – 18/10/24
12- 11/11 – 15/11/24

1.10 APPLICATIONAND ADMISSION PROCEDURE

1.10.1 Procedure:

1. Advertisement of the programmes within the last quarter in the preceding session.
2. Download, filling and submission of the online Application Form by applicants.
3. Payment of application fee
4. Certification of payment by College Secretariate.
5. Forwarding application forms to the corresponding Faculty Head
6. Consideration of application by the corresponding Faculty Admissions Committee
7. Presentation, consideration and approval of the recommended admission list to the College Senate/Academic Board.
8. Publication of the admission list and online delivery of admission letters
9. Fee payment & online registration for the corresponding session.

1.11 ADMISSION REQUIREMENTS

Although the College specifies the benchmark for admission into the Fellowship programmes, individual Faculties/Specialties are at liberty to require additional qualifications for admission, as the need may arise.

1.11.1 Admission into Year 1

1. DVM or equivalent
2. Valid registration with the VCN
3. Minimum of 3 years relevant post-graduation experience.
4. NYSC Discharge Certificate or Exemption Letter.

1.11.2 Admission into Year 3

1. DVM plus Fellowship Part I Diploma or a relevant MSc degree
2. Minimum of 5 years post-graduation experience.
3. Valid registration with the VCN
4. NYSC Discharge Certificate or Exemption Letter.

1.12 RESIDENTS PROJECT ADMINISTRATION

As part of the training, the resident should complete an investigative project that contributes to the advancement of veterinary practice or clinical investigation. The allocation of a Supervisor shall be at the commencement of Year 3 of the programme.

At the end of Year 5, all projects are to be defended.

1.12.1 Project Management:

1. Two Supervisors shall be assigned to year 3 Residents in semester 1.
2. Students are to discuss (with their supervisor) their proposed clinical/investigative work.
3. Projects are to be undertaken within the 3rd, 4th and 5th Year of study.
4. Two clinical cases/investigations are to be thoroughly worked up and published in an acceptable professional journal (institutional or national association journals) in each of the 3 terminal years of study.
5. Students MUST communicate the progress of their work to the supervisor every semester.
6. 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.

7. Project defenses are to be conducted (hybrid) at the next examination from the corresponding Study Centre.
8. The 6 publications made are to be bound and 4 copies of the bound Project report are to be submitted (within 3 months of a successful defense) for endorsement viz.: student, supervisor, Study Centre Library and CVSN Secretariat copies.

N.B: Project grades shall remain INCOMPLETE until bound copies of the endorsed Project report is forwarded to the Centre Supervisor and scores collated then forwarded to the Head of Faculty.

1.12.2 The project cover colour:

i. Black for Pathology Faculty
ii. Green for Public Health & Preventive Pathology Faculty
iii. Maroon for Pathology Faculty
iv. Grey/Ash for Surgery faculty

1.12.3 Sequence of Project Reporting:

1. **Cover page**
2. **Title page**
3. **Declaration page**
4. **Certification page**
5. **Acknowledgment**

All in single or 1.15 spacing

6. **Abstract (**Maximum of 300 words/1 page)
7. **Table of Content** (Should reflect only the 1st, 2nd and 3rd tiers of the headings)
8. **List of Figures**
9. **List of Tables**
10. **List of Plates**
11. **List of Appendices**
12. **Abbreviations, Definitions, Glossary and Symbols**

1.5 or double spacing

13. **Introduction** (Preamble, Statement/Justification, Aims and Objectives of the Project work) Double spacing
14. **Article 1**
15. **Article 2**
16. **Article 3**
17. **Article 4**
18. **Article 5**
19. **Article 6**
20. **Conclusion, Recommendation and Summary** Double spacing

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Cover page

The cover page shall indicate (in upper case only) the:

- TITLE OF THE PROJECT
- NAME OF THE STUDENT (SURNAME LAST)
- FACULTY AND COLLEGE NAME
- MONTH/YEAR CORRECTIONS CERTIFIED

Title page

The following shall be on the title page (in upper case only):

-TITLE OF PROJECT
-NAME OF THE STUDENT (SURNAME LAST) WITH QUALIFICATIONS
-REGISTRATION NUMBER

Followed by:

A PROJECT REPORT SUBMITTED TO THE _____ FACULTY, COLLEGE OF VETERINARY SURGEONS NIGERIA IN PARTIAL FULFILMENT FOR THE AWARD OF FELLOWSHIP DIPLOMA (_____), COLLEGE OF VETERINARY SURGEONS NIGERIA.

-Month and Year of Certification of correction

Declaration page

The following wordings (in sentence case) are to be reflected on the Declaration page:

I declare that the work/publications in this Project report entitled_____ _____ has been performed by me. The information derived from the literature has been duly acknowledged in the text and a list of references provided. No part of this Project report was previously presented for another Certificate, Degree or Diploma at this or any other Institution.

_____	_____	_____
Name of Resident	Signature	Date

Certification page

The following wordings (in sentence case) are to be reflected on the Certification page:

This Project report entitled _____ (in upper case) by _____ (surname last and in upper case) meets the regulations governing the award of 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 _____

Project Supervisor

(Name) (Signature)

_____ _____ Date _____

Head of Faculty/Study Centre Supervisor

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 clinical/investigative work, objectives of significant contributions 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 1st, 2nd and 3rd tiers of the headings. Whereas 1st level headings are to be in upper case and bold, 2nd 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.

Article/Publication 1:

Photocopy of 1st relevant publication in year 3 of the programme.

Article/Publication 2:

Photocopy of 2nd relevant publication in year 3 of the programme.

Article/Publication 3:

Photocopy of 1st relevant publication in year 4 of the programme.

Article/Publication 4:

Photocopy of 2nd relevant publication in year 4 of the programme.

Article/Publication 5:

Photocopy of 1st relevant publication in year 5 of the programme.

Article/Publication 6:

Photocopy of 2nd relevant publication in year 5 of the programme.

Summary, Conclusion and Recommendations

The summary should present highlights of each publication within a paragraph each. The conclusions should give an inference drawn from the findings in the cases presented. Challenges encountered during the study should be indicated. Conclusions should be drawn on the basis of the publications 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

PATHOLOGY FACULTY

2.1 TRAINING AND FACILITIES

2.1.1 Study Centres

The Ahmadu Bello University, Zaria, University of Nigeria, Nsukka, University of Ibadan, University of Maiduguri, Usmanu Danfodiyo University, National Veterinary Research Institute, Vom/ University of Jos and University of Abuja Study Centres are approved Study Centres for the Pathology Faculty.

Fig. 2.1: Zaria Study Centre, Ahmadu Bello University, Zaria.

2.1.2 CONTACTS

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2.2 SPECIALTY/OPTION COORDINATORS (HODs)

Veterinary Diagnostic Pathology

Name:

Contact Add:

Phone No:
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Veterinary Clinical Pathology

Prof. Chah Kennedy
Dept of Vet Pathology,
University of Nigeria, Nsukka.
Phone No: 08060926059
E-mail: Name:

Veterinary Microbiology

Name:

Contact Add:

Phone No:
E-mail:

Veterinary Parasitology

Prof O.O. Okubanjo
Dept of Vet. Parasitology,
Ahmadu Bello University, Zaria.
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2.3 TRAINING OBJECTIVES

General

a) Acquire adequate knowledge to assume responsibility for the broad spectrum of assessment and interpretation of specimens, problems and situations encountered by Veterinary Pathologists.

b) Provide Veterinarians with the opportunity to pursue career goals in teaching, research and diagnostic service and use of the state-of-the-art techniques. Advance Veterinary Pathology through promotion of research and publication.

2.4 PROGRAMME DESCRIPTION

Pathology is the branch of Veterinary Medicine that deals with disease processes including their causes, pathogenesis, diagnosis and laboratory monitoring.

Four specialized areas make up the Pathology Faculty Group and these are:

a) Veterinary Diagnostic Pathology
b) Veterinary Clinical Pathology
c) Veterinary Microbiology
d) Veterinary Parasitology

2.4.1 Clinics Management

Supervised training implies interaction between trainee and supervisor during the investigative/diagnosis 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 Pathology Faculty shall consist of:

1. Minimum of 16hrs of Diagnostic Clinics/week for 12 weeks in Semester 1.
2. Minimum of 16hrs of Diagnostic Clinics/week for 12 weeks in Semester 2.
3. Clinical Procedures/Practical (September/October Residency)
4. Monthly virtual Clinical seminar presentations
5. Publication of 2 cases/activities per session for Year 3, 4 & 5.

All Resident trainees are to participate in relevant diagnostic clinical activities within the 3 months of each semester in an approved Clinical Training Centre (Veterinary or human). A minimum of 16Hrs per week shall be the minimum acceptable Clinic time. The following facilities are recommended for the Semester Clinical Training:

i. Veterinary Teaching Hospitals.
ii. Veterinary and Allied research Institute with Fellows in their employment such as NVRI Vom, NAPRI Shika etc.
iii. State Central Veterinary Hospitals (State Capitals)
iv. Accredited Private Veterinary Clinics/Hospitals.
v. Human/General Diagnostic laboratories

Emphasis shall be on the student diagnosing and reporting relevant cases in his/her specialty. The following are suggested for the assessment of students in Clinics;

1. The immediate supervising veterinarian shall countersign cases reported by the Resident in the Logbook.
2. The Mentor should visit the student at site whenever possible to assess the resident's conduct and participation.
3. Residents should write up at least 2 cases for publication within each such session which would be graded by the Project Supervisor in the Final year.

The Clinical Procedures logbook shall be used for the documentation and accomplishment of the various tasks and development of skills by the Year 1 & 2 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 Clinical Procedures logbook before graduation. The various activities can be undertaken anytime within the 5 years of training. 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.

2.4.2 Guidelines for Pathology Faculty Residents Clinical Engagement:

1. All Pathology Faculty students are to dress appropriately and conduct themselves responsibly in Clinics/Surgery.
2. All Pathology Faculty students are to participate in the Clinics (Semester Clinics & Sept/October Residency)
3. Relevant samples attended to, are to be documented and endorsed in the corresponding Clinical Activity Logbook, this shall be submitted to the Study/Clinical Training Centre Coordinator at the end of the Semester for grading.
4. Records of attendance at the clinics are to be endorsed daily by the Supervising Veterinarian.
5. Students are to actively participate in the management of cases presented especially relevant cases to their Specialty/option of study.

2.4.3 September/October Residency Clinics

Supervised Diagnostic/practical sessions shall be undertaken in Sept/October each session. All Residents are expected to participate in this exercise.

All residents are to ensure that once they have achieved proficiency in the corresponding Clinical Skill, they should demonstrate same to a supervising Fellow who shall thereafter endorse the

relevant component of the Skill Acquisition Logbook. ***Residents shall only be deemed to have met Clinical Skill requirements for graduation after demonstrating a minimum of 80% of the listed procedures in his/her Specialty.***

The listed clinical activities/practical sessions/demonstrations shall be undertaken and or discussed during the Sept/October Residency:

General:

- Identification of key Laboratory Equipment and their Uses.
- Preparation and Staining of Blood Smears
- Agglutination test methods/principles
- Diagnostic Tools and Techniques (Microbiology, Parasitology, Haematology, Toxicological, Clinical Chemistry, Cytology, Gross and Histopathology, Immunohistochemistry, Transmission Electron Microscopy, Scanning Electron Microscopy)

a) Veterinary Diagnostic Pathology

- Cytologic techniques: Fine needle (FNAB), Swabs, Scrapings & Imprints.
- Cytologic sample preparation and staining methods
- Evaluation of cytologic smears
- Cytology Report Writing
- Identification of key Necropsy/Laboratory Equipment /Instruments and their Uses
- Biopsy Practice/Procedures
- Blood/Fluid Smears Preparation and Staining
- Necropsy Practice/Procedures
- Sample Collection, Preservation, and Transportation
- Special Staining Types, Procedures, and Purposes
- A typical Post-mortem Report Form & report writing,
- Systematic Post-mortem Procedures in different species of Animals,
- Histopathology techniques,
- Special stains and Adjunct diagnosis,
- Morphological diagnosis, Aetiological diagnosis & Differential diagnosis
- Tentative and Confirmatory Disease Diagnosis (Morphological, Aetiological, Clinical)
- Clinical Pathology Case Interpretation

b) Veterinary Clinical Pathology

- Heamatology sample collection methods:
    a. Venipuncture techniques and sample volumes
    b. Containers for samples types
- Haematologic Techniques:
    a. Blood mixing
    b. PCV determination by centrifugation
    c. Plasma protein estimation by refractometry
    d. Red cell and leukocyte concentration dilutions and haemocytometer microscopy
    e. Blood smear preparation
    f. Differential leucocyte and blood smear evaluation

g. Reticulocyte stain and enumeration

- Haematology data interpretation:
  a. Erythrogram: numeric and morphologic
  b. Thrombogram : numeric and morphologic
  c. Leukogram: numeric and morphologic
- Interpretation of haemograms generated by Manual and Automated Methods
- Haematology forms and report writing
- Manual vs Automated Methods for the Determination of Analytes
- Absorbance spectrophotometry
- Flame photometry
- Serum Chemistry Report Writing
- Urine collection methods:
  a. Cystocentesis
  b. Voided (MSU)
  c. Manual bladder compression
  d. Catheterisation
- Urine examination methods:
  a. Visual examination
  b. Refractometry
  c. Dip stick method
  d. Urine sedimentation and microscopy
- Chemical (Dipstick) Examination of Urine
- Sediment Examination of Urine
- Interpretation of Urinalysis Findings
- Urinalysis Report Writing

c) Veterinary Microbiology

Bacteriology:

- Essential equipments in a diagnostic bacteriology lab
- Biosafety
- Aseptic techniques
- Identification and use of media for bacterial cultivation
- Sample collection and submission for bacteriological diagnosis
- Examination of clinical samples by direct microscopy:
- Staining techniques – gram stain, acid- fast stain etc
- Examination of clinical samples: Culture techniques
- Bacterial identification: Colonial characteristics
- Bacterial identification: Microscopic characteristics
- Bacterial identification: Biochemical characteristics - sugar fermentation, citrate, urease, MR, indole, TSI, coagulase, catalase, oxidase tests etc
- Use of ISO standard procedures for culture and isolation of bacterial organisms
- Identification of bacterial organisms using MALDI-TOF and Vitek-2 compact
- Antimicrobial susceptibility testing using disk diffusion method
- Antimicrobial susceptibility testing using Vitek-2 compact

- Culture and isolation of Mycoplasm spp
- Screening (serological test) for Brucellosis using Rose Bengal test
- Screening (Serological test) for Mycoplasma spp using ELISA
- Molecular diagnostics: Nucleic acid extraction, amplification, electrophoresis and visualization
- Laboratory hazards identification and precautionary measures

Virology
- Collection, packaging and transport of samples for virology evaluation
- Identification and processing of different sample types for virological diagnosis
- Identification of different cell lines
- Virus isolation in cell culture and laboratory animal (mice)
- Screening for viral antibody using ELISA, HI and AGID
- Application of serological tests in virology
- Viral Nucleic acid detection – Polymerase chain reactions (PCRs – rRT-PCR

Mycology
- Preparing media, reagents and stains required in the lab for mycology
- Identification of sample types for fungal diagnosis
- Collection and Processing of specimens/samples for mycology
- Selection of appropriate media for sample
- Performing lab procedures, direct examination, culture, macroscopic examination, staining and microscopy examination
- Identification of common yeasts, dimorphic and mycelia fungi (especially relevant to animals)
- Performing biochemical (and other) tests for fungi identification
- Interpretation of lab results and guide towards diagnosis of fungal diseases
- Antifungal susceptibility testing
- Introduction to molecular techniques for mycology

d) Veterinary Parasitology

Protozoology
- Precautions for sample collection, storage, transportation and waste disposal.
- Identification of the different sample containers and their preferred usage
- Identification of different anticoagulants and the dose rate
- Laboratory Animal restraint methods
- sample collection
- Storage types, methods and processing of collected samples
- Tpes of smears and staining techniques
- Microscope calibration
- Processing different samples for parasitological diagnosis e.g. urine, stool, blood
- Application of different concentration techniques and preservation procedures for different samples e.g. Formol ether
- Application of special stains for parasitic stages in stool e.g. modified Z.N, Trichrom stain
- Immuno-parasitology techniques e.g. Immunoelectrophoresis techniques, ELISA techniques and Indirect haemagglutination and other agglutination techniques

- Basic molecular procedures e.g. DNA extraction, DNA visualization and amplification
- Techniques for blood parasitic examination e.g. Knott's test. Modified Knott's test, Ehrlichia culture etc
- Animal house management

Entomology

- Identification of the different sample containers and their preferred usage
-Parasitic stages that may be recovered from blood samples.
- Identification of ticks and other ectoparasites
- Mounting different stages of medically important arthropods
- Identification and use of traps

Helminthology

- Identification of helminth egg types
- Simple and centrifugal flotation techniques
- Constitution of flotation fluids, and comparison of efficacy of different types of fluids in egg recovery.
- McMaster egg counting methods and interpretation
- Recovery of fluke eggs from faeces and bile using sedimentation
- Faecal culture and larval recovery
- Recovery of larvae using Baermann's method
- Recovery and counting of worms in gastrointestinal tract
- Gross and microscopic identification of important helminths.
- Use of ocular micrometer for measuring different parasitic stages that may be recovered from stool, urine and soil.

2.5 LECTURES, PRACTICAL AND EXAMINATIONS

2.5.1 Programme Course and Credit Unit Allocations

1. The minimum duration of training for entrants to Years 1 & 3 Fellowship programmes shall be 5 and 3 years respectively.
2. Written examinations, Clinics/practical, presentations, publications as well as assessment of relevant Logbooks (as applicable) shall be the modality for assessment of Residents.

2.5.2 Examinations

There shall be uniform criteria for the assessment of Trainees.

1. Examinations shall be conducted at the end of every session.
2. All courses shall be graded over 100%
3. For all examinations:
   a. < 50% = Fail
   b. 50-59% = C Pass
   c. 60-69% = B Good
   d. > 70% = A Excellent

4. For Clinic grading: 30% = Sessional Clinic Report/Logbooks
   30% = Sept/October Residency
   40% = End of session exams (Oral, Facility identification & Demonstrations)

2.6 SEMINARS, CONFERENCES AND PUBLICATIONS

1. All Residents from years 3 – 5 of study are to develop 2 cases attended to every session and publish them in either institutional journals or National Association journals as their project.
2. All Project write-ups for Publications shall be Case Reports/investigations/activities encountered within the corresponding period of the Study.
2. Faculty virtual Seminars shall be decentralized and held monthly from the corresponding Study Centre.
3 VTH Directors, Study Centre Supervisors, Specialty/Option Coordinators and other Resource Persons as well as all Residents are to participate in the Seminars.
4 Publication printouts are to be bound and submitted to the Project Supervisor for assessment and necessary grading prior to the final defence.

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

The resident while gaining experience in practice is also expected to prepare and present work at larger scientific meetings and conferences. Residents are thus encouraged to present their writeups at relevant seminars before publication.

The resident is expected to complete an investigative study on the Diagnostic services undertaken, the outcome of which should be publishable in a peer reviewed/refereed scientific journal (National Association or Institutional Journal)

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

2.7 PATHOLOGY FACULTY COURSES

Diagnostic Pathology

Year 1:

Semester 1

PDG 810 Diagnostic Pathology I
PDG 814 Diagnostic Pathology II
PDG 811 Diagnostic Pathology III
PDG 815 Diagnostic Pathology IV
PDG 819A Diagnostic Pathology Clinics A

Semester 2:
PDG 812 Diagnostic Pathology V
PDG 816 Diagnostic Pathology VI
PDG 813 Diagnostic Pathology VII
PDG 817 Diagnostic Pathology VIII
PDG 819B Diagnostic Pathology Clinics B

Year 2:
Semester 1
PDG 820 Diagnostic Pathology IX
PDG 823 Diagnostic Pathology X
PDG 821 Diagnostic Pathology XI
PDG 824 Diagnostic Pathology XII
PDG 829A Diagnostic Pathology Clinics A

Semester 2:
PDG 822 Exfoliative Cytology I
PDG 825 Exfoliative Cytology II
PDG 829B Diagnostic Pathology Clinics B

Year 3:
Semester 1:
PDG 830 Diagnostic Pathology XIII
PDG 832 Diagnostic Pathology XIV
PDG 839A Diagnostic Pathology Clinics A

Semester 2:
PDG 831 Electron Microscopy I
PDG 833 Electron Microscopy II
PDG 839B Diagnostic Pathology Clinics B

Year 4:
Semester 1
PDG 840 Diagnostic Pathology XV
PDG 842 Diagnostic Pathology XVI
PDG 849A Diagnostic Pathology Clinics A

Semester 2:
PDG 841 Electron Microscopy III
PDG 843 Electron Microscopy IV
PDG 849B Diagnostic Pathology Clinics B

Year 5:
Semester 1:

PDG 850 Project
PDG 859A Diagnostic Pathology Clinics A

Semester 2:
PDG 851 Seminar
PDG 859B Diagnostic Pathology Clinics B

Clinical pathology
Year 1:
Semester 1:
PDG 810 Diagnostic Pathology I
PDG 812 Diagnostic Pathology II
PDG 811 Diagnostic Pathology III
PDG 813 Diagnostic Pathology IV
PDG 819 A Diagnostic Clinical Pathology Clinics A

Semester 2:
CPDG 810 Diagnostic Clinical Pathology I
PDG 814 Diagnostic Clinical Pathology II
PDG 819 B Diagnostic Clinical Pathology Clinics B

Year 2:
Semester 1:
CPDG 820 Diagnostic Clinical Pathology III
CPDG 823 Diagnostic Clinical Pathology IV
CPDG 821 Diagnostic Clinical Pathology V
CPDG 824 Diagnostic Clinical Pathology VI
PDG 829 A Diagnostic Clinical Pathology Clinics A

Semester 2:
PDG 822 Exfoliative Cytology I
PDG 825 Exfoliative Cytology II
PDG 829 B Diagnostic Clinical Pathology Clinics B

Year 3:
Semester 1:
CPDG 830 Diagnostic Clinical Pathology VII
CPDG 832 Diagnostic Clinical Pathology VIII
PDG 839 A Diagnostic Clinical Pathology Clinics A

Semester 2:
CPDG 831 Diagnostic Clinical Pathology IX
CPDG 833 Diagnostic Clinical Pathology X
PDG 839 B Diagnostic Clinical Pathology Clinics B

Year 4:
Semester 1:
CPDG 840 Diagnostic Clinical Pathology XI
CPDG 842 Diagnostic Clinical Pathology XII
PDG 849 A Diagnostic Clinical Pathology Clinics A

Semester 2:
CPDG 841 Diagnostic Clinical Pathology XIII
CPDG 843 Diagnostic Clinical Pathology XIV
PDG 849 B Diagnostic Clinical Pathology Clinics B

Year 5:
Semester 1:
PDG 859 A Diagnostic Clinical Pathology Clinics A
CPDG 851 Seminar (modified)

Semester 2:
PDG 853 Project
PDG 859 B Diagnostic Clinical Pathology Clinics B

Microbiology
Year 1:
Semester 1:
PMC 810 Concepts in Microbial Pathogenesis I
PMC 813 Concepts in Microbial Pathogenesis II
PMC 811 Recent Advances in Immunology I
PMC 814 Recent Advances in Immunology II
PMC 819A Microbiology Clinics A

Semester 2:
PMC 812 Advances in Bacteriology I
PMC 815 Advances in Bacteriology II
PMC 819B Microbiology Clinics B

Year 2:
Semester 1:
PMC 820 Diagnostic Bacteriology I
PMC 824 Diagnostic Bacteriology II
PMC 821 Diagnostic Mycoplasmology I
PMC 825 Diagnostic Mycoplasmology II
PMC 829A Microbiology Clinics A

Semester 2:

PMC 822 Diagnostic Mycology I
PMC 826 Diagnostic Mycology II
PMC 823 Diagnostic Virology I
PMC 827 Diagnostic Virology II
PMC 829B Microbiology Clinics B

Year 3:
Semester 1:
PMC 830 Diagnostic Immunology I
PMC 833 Diagnostic Immunology II
PMC 839A Microbiology Clinics A

Semester 2:
PMC 831 Diagnostic Bacteriology III
PMC 834 Diagnostic Bacteriology IV
PMC 832 Diagnostic Bacteriology V
PMC 835 Diagnostic Bacteriology VI
PMC 839B Microbiology Clinics B

Year 4;
Semester 1;
PMC 840 Diagnostic Mycoplasmology III
PMC 843 Diagnostic Mycoplasmology IV
PMC 841 Diagnostic Mycology III
PMC 845 Diagnostic Mycology IV
PMC 849A Microbiology Clinics A

Semester 2:
PMC 842 Diagnostic Virology III
PMC 846 Diagnostic Virology IV
PMC 849B Microbiology Clinics B

Year 5
Semester 1:
PMC 850 Project
PMC 859A Microbiology Clinics A

Semester 2:
PMC 851 Seminar
PMC 859B Microbiology Clinics B

Parasitology
Year 1;
Semester 1:

PPA 810 Principles of Veterinary Parasitological Diagnosis I
PPA 813 Principles of Veterinary Parasitological Diagnosis II
PPA 811 Emerging Veterinary Parasitic Diseases I
PPA 814 Emerging Veterinary Parasitic Diseases II
PPA 819A Parasitology Clinics A

Semester 2:
PPA 812 Parasitic Zoonotic Diseases I
PPA 815 Parasitic Zoonotic Diseases II
PPA 819B Parasitology Clinics B

Year 2:
Semester 1
PPA 820 Advances in Veterinary Protozoology I
PPA 823 Advances in Veterinary Protozoology II
PPA 821 Advances in Veterinary Entomology I
PPA 825 Advances in Veterinary Entomology II
PPA 829A Parasitology Clinics A

Semester 2
PPA 822 Advances in Veterinary Helminthology I
PPA 824 Advances in Veterinary Helminthology II
PPA 829B Parasitology Clinics B

Year 3:
Semester 1:
PPA 830 Parasite Immunology I
PPA 833 Parasite Immunology II
PPA 831 Diagnostic Veterinary Protozoology and Rickettsiology I
PPA 834 Diagnostic Veterinary Protozoology and Rickettsiology II
PPA 839A Parasitology Clinics A

Semester 2:
PPA 832 Diagnostic Veterinary Parasitology I
PPA 835 Diagnostic Veterinary Parasitology II
PPA 839B Parasitology Clinics B

Year 4:
Semester 1:
PPA 840 Diagnostic Veterinary Entomology I
PPA 842 Diagnostic Veterinary Entomology II
PPA 849A Parasitology Clinics A

Semester 2:
PPA 841 Diagnostic Veterinary Helminthology I
PPA 843 Diagnostic Veterinary Helminthology II
PPA 849B Parasitology Clinics B

Year 5:
Semester 1:
PPA 850 Project
PPA 859A Parasitology Clinics A

Semester 2:
PPA 851 Seminar
PPA 859B Parasitology Clinics B

2.8 PROGRAMME STRUCTURE

The activities in each option as well as in each year of study detailing the Credit Unit allocation is presented in the Course outline (Table 2.1).

Table 2.1: DIAGNOSTIC PATHOLOGY SPECIALTY/OPTION

Year of Study	Semester	Course Code	Course Title and Description	No of Units
1	Semester 1	PDG 810	**Diagnostic Pathology I** This course is an in-depth study of cellular pathology and tissue response to injury. Lectures and seminars are centered on topics including acute inflammation, cell degeneration and necrosis, fluid, vascular and haemodynamic disorders in mammalian animal system should be discussed.	2
		PDG 814	**Diagnostic Pathology II** This course is an in-depth study of cellular pathology and tissue response to injury. Lectures and seminars are centered on topics including acute inflammation, cell degeneration and necrosis, fluid, vascular and haemodynamic disorders in aquatic animal system should be discussed	2
		PDG 811	**Diagnostic Pathology III** This course is an in-depth study of cellular pathology. Lectures and seminars are centered on topics including chronic inflammation and repair, disturbances of cell growth and basic immunopathology in mammalian animal system should be discussed.	2
		PDG 815	**Diagnostic Pathology IV** This course is an in-depth study of cellular pathology. Lectures and seminars are centered on topics including chronic inflammation and repair, disturbances of cell growth and basic immunopathology in aquatic animal system should be discussed.	2
		PDG 819A	**Diagnostic Pathology Clinics A**	3
		PDG 812	**Diagnostic Pathology V** The objective of this course is to provide students with the concepts of the principles and execution of laboratory techniques, autopsy procedures in various species of animals, tentative disease diagnosis and pathology report writing.	2

	Semester 2	**PDG 816**	**Diagnostic Pathology VI** The objective of this course is to provide students with the concepts of the recognition and confirmation of the role of pathogens and nutrition in disease processes.	2
		PDG 813	**Diagnostic Pathology VII** The objective of this course is to provide students with the concepts of the principles and execution of laboratory techniques, autopsy procedures in poultry, tentative disease diagnosis and pathology report writing. It also entails the recognition and confirmation of the role of pathogens in disease processes	2
		PDG 817	**Diagnostic Pathology VIII** The objective of this course is to provide students with the concepts of the principles and execution of laboratory techniques, autopsy procedures in fish, tentative disease diagnosis and pathology report writing. It also entails the recognition and confirmation of the role of pathogens in disease processes	2
		PDG 819B	**Diagnostic Pathology Clinics B**	3
			Total	22
	Semester 1	**PDG 820**	**Diagnostic Pathology IX** In this course, students are taught the pathogenesis and morphologic disease diagnosis including introductory oncology and skin diseases. The student is required to complete at least 30-40 cases. The report on every case is to include a summary of all tests carried out in other units of the diagnostic laboratory (bacteriology, virology, etc).	2
		PDG 823	**Diagnostic Pathology X** In this course, students are taught techniques in histology, histochemistry, immunohistochemistry and macro-and micro-photography.	2
		PDG 821	**Diagnostic Pathology XI** In this course the student gains further knowledge in necropsy technique and interpretation of lesions.	2
		PDG 824	**Diagnostic Pathology XII**	2

2			In this course the student is taught the concept of correlative pathology in an attempt to explain pathologically observed clinical manifestations. The pathogenesis and morphologic diagnosis of diseases including respiratory diseases prevalent during the season are emphasized. Another set of 30-40 cases are completed by the student. The report in every case should include a summary of all test carried out in other units of the diagnostic laboratory. Selected cases are discussed at weekly necropsy rounds.	
		PDG 829A	**Diagnostic Pathology Clinics A**	3
	Semester 2	**PDG 822**	**Exfoliative Cytology I** This course deals with advanced study of exfoliates in organs and tissue biopsies including liver, kidney and lymphoid organs and their interpretations in diagnostic and clinical pathology. A set of 30-40 cases are completed by the student. Selected cases are discussed at weekly necropsy rounds.	2
		PDG 825	**Exfoliative Cytology II** This course deals with advanced study of exfoliates in organs and tissue biopsies other than the liver, kidney and lymphoid organs and their interpretations in diagnostic and clinical pathology. A set of 30-40 cases are completed by the student. Selected cases are discussed at weekly necropsy rounds.	2
		PDG 829B	**Diagnostic Pathology Clinics B**	3
			Total	18
3	**Semester 1**	**PDG 830**	**Diagnostic Pathology XIII** In this course the student is provided with the initial training to obtain biopsy samples and gross and microscopic examination of biopsy materials and fixed specimens submitted to the diagnostic laboratory. Morphological diagnosis and prognosis are emphasized especially with neoplastic conditions. The student is required to complete 30-40 cases.	2
		PDG 832	**Diagnostic Pathology XIV**	2

			The student is exposed to the use of various special stains and techniques in histochemistry and immunocytochemistry. In addition, the student should have the knowledge of basic principles of immunopathology, tissue processing and prevalent diseases in Nigeria.	
		PDG 839A	**Diagnostic Pathology Clinics A**	3
	Semester 2	**PDG 831**	**Electron Microscopy I** This course introduces students to the principles and procedures required for the examination of structures with the transmission electron microscope (TEM) and the interpretation/analysis of ultrastructural fractures of cells and tissues in disease.	2
		PDG 833	**Electron Microscopy II** This course introduces students to the principles and procedures required for the examination of structures with the scanning electron microscope (SEM) and the interpretation/analysis of ultrastructural fractures of cells and tissues in disease.	2
		PDG 839B	**Diagnostic Pathology Clinics B**	3
			Total	14
4	**Semester 1**	**PDG 840**	**Diagnostic Pathology XV** In this course the student is expected to gain further experience in the interpretation of lesions of tropical diseases. There should be an in-depth discussion of their pathogenesis and diagnosis. Students are expected to complete at least 30-40 cases with the report of each case including a summary of all tests carried out in other units of the diagnostic laboratory. Selected cases are discussed at weekly necropsy rounds.	2
		PDG 842	**Diagnostic Pathology XVI** In this course the student is expected to gain experience in the interpretation of lesions. Special attention should be given to pathology of important non-tropical diseases. There should be an in-depth discussion of their pathogenesis and diagnosis. Selected cases are discussed at weekly necropsy rounds.	2

		PDG 849A	**Diagnostic Pathology Clinics A**	3
	Semester 2	**PDG 841**	**Electron Microscopy III** In this course the student gains further experience on the principles and procedures required for the examination of structures with the transmission electron microscope (TEM) and the interpretation/analysis of ultra-structural fractures of cells and tissues in disease.	2
		PDG 843	**Electron Microscopy IV** In this course the student gains further experience on the principles and procedures required for the examination of structures with the scanning electron microscope (SEM) and the interpretation/analysis of ultra-structural fractures of cells and tissues in disease.	2
		PDG 849B	**Diagnostic Pathology Clinics B**	3
			Total	14
5	**Semester 1**	**PDG 850**	**Project** Each student is required under the supervision of a Fellow/instructor of equivalent qualification to complete satisfactorily a research project in the fifth year. The project should be based on a laboratory investigation or a special topic such as a prospective or retrospective study and should make contribution to the body of knowledge in the field of pathology. The project should lead to a paper suitable for publication in a referred journal.	6
		PDG 859A	**Diagnostic Pathology Clinics A**	3
	Semester 2	**PDG 851**	**Seminar** This is a one-hour presentation by the student related to the course and clinical exposure and the subject of his student project.	1
		PDG 859B	**Diagnostic Pathology Clinics B**	3
			Total	13

CLINICAL PATHOLOGY SPECIALTY/OPTION

Year of Study	Semester	Course Code	Course Title and Description	No of Units
1	**Semester1**	**PDG 810**	**Diagnostic Pathology I** This course is an in-depth study of cellular pathology. Lectures and seminars are centred on topics such as cell degeneration and necrosis, fluid and haemodynamic disorders in mammalian systems should be discussed.	2
		PDG 812	**Diagnostic Pathology II** This course is an in-depth study of cellular pathology. Lectures and seminars are centred on topics such as cell degeneration and necrosis, fluid and haemodynamic disorders. Both Avian and aquatic systems should be discussed.	2
		PDG 811	**Diagnostic Pathology III** This course is an in-depth study of cellular pathology. Lectures and seminars are centred on topics such as inflammation and repair, disorders of cell growth and basic immunopathology in mammalian systems should be discussed.	2
		PDG 813	**Diagnostic Pathology IV** This course is an in-depth study of cellular pathology. Lectures and seminars are centred on topics such as inflammation and repair, disorders of cell growth and basic immunopathology in aquatic systems should be discussed.	2
		PDG 819 A	**Diagnostic Clinical Pathology Clinics A**	3
	Semester 2	**CPDG 810**	**Diagnostic Clinical Pathology I** This course involves initial training in diagnostic clinical pathology including basic scientific principles of haematology techniques.*	2
		PDG 814	**Diagnostic Clinical Pathology II**	2

			This course involves initial training in diagnostic clinical pathology including basic scientific principles of interpretation of cytochemical stains.*	
		PDG 819 B	**Diagnostic Clinical Pathology Clinics B**	3
			Total	18
2	**Semester 1**	**CPDG 820**	**Diagnostic Clinical Pathology III** This course deals with the presentation of haematological, clinical biochemical, jaundice(icterus) in differential diagnosis and urological samples from a variety of mammalian species. There should be formal case discussions with emphasis on diseases prevalent in the season.	2
		CPDG 823	**Diagnostic Clinical Pathology IV** This course deals with the presentation of haematological, clinical biochemical, jaundice(icterus) in differential diagnosis and urological samples from a variety of non-mammalian species. There should be formal case discussions with emphasis on diseases prevalent in the season.	2
		CPDG 821	**Diagnostic Clinical Pathology V** This will involve mammalian sample collection, preservation and evaluation in the laboratory. The student is required to complete 30-40 cases. The report in every case should include a summary of all tests carried out in other units of the diagnostic laboratory.	2
		CPDG 824	**Diagnostic Clinical Pathology VI** This will involve non-mammalian sample collection, preservation and evaluation in the laboratory. The student is required to complete 30-40 cases. The report in every case should include a summary of all tests carried out in other units of the diagnostic laboratory.	2
		PDG 829 A	**Diagnostic Clinical Pathology Clinics A**	3
	Semester 2	**PDG 822**	**Exfoliative Cytology I** This course deals with the advanced study of mammalian cytological samples and their interpretation. A set of 30-40 cases are completed by the student.	2

		PDG 825	**Exfoliative Cytology II** This course deals with the advanced study of non-mammalian cytological samples and their interpretation. A set of 30-40 cases are completed by the student.	2
		PDG 829 B	**Diagnostic Clinical Pathology Clinics B**	3
			Total	18
3	**Semester 1**	**CPDG 830**	**Diagnostic Clinical Pathology VII** In this course, further experience in diagnostic clinical pathology is provided with particular attention paid to diseases prevalent during the season. Interpretations and presentation of haematological clinical, biochemical, jaundice (icterus) in differential diagnosis, urological and cytological samples from a variety of mammalian species are undertaken by the student.	2
		CPDG 832	**Diagnostic Clinical Pathology VIII** In this course, further experience in diagnostic clinical pathology is provided with particular attention paid to diseases prevalent during the season. Interpretations and presentation of haematological clinical, biochemical, jaundice (icterus) in differential diagnosis, urological and cytological samples from a variety of non-mammalian species are undertaken by the student.	2
		PDG 839 A	**Diagnostic Clinical Pathology Clinics A**	3
	Semester 2	**CPDG 831**	**Diagnostic Clinical Pathology IX** This course will involve the evaluation of mammalian samples submitted to the laboratory. The student is required to complete 30-40 cases. The report in every case should include a summary of all tests carried out in other units of the diagnostic laboratory.	2
		CPDG 833	**Diagnostic Clinical Pathology X** This course will involve the evaluation of non-mammalian samples submitted to the laboratory. The student is required	2

			to complete 30-40 cases. The report in every case should include a summary of all tests carried out in other units of the diagnostic laboratory.	
		PDG 839 B	**Diagnostic Clinical Pathology Clinics B**	3
			Total	14
4	**Semester 1**	**CPDG 840**	**Diagnostic Clinical Pathology XI** In this course, further experience in diagnostic clinical pathology is provided with particular attention given to metabolic and nutritional diseases, with emphasis placed on endocrinopathies, minerals, water, electrolyte disorders, acid-base imbalances and clinical biochemistry of ascites	2
		CPDG 842	**Diagnostic Clinical Pathology XII** In this course, further experience in diagnostic clinical pathology is provided in addition presentation and interpretation of haematological, clinical biochemical and cytological samples from a variety of species are undertaken by the student.	2
		PDG 849 A	**Diagnostic Clinical Pathology Clinics A**	3
	Semester 2	**CPDG 841**	**Diagnostic Clinical Pathology XIII** This course will involve further evaluation of mammalian samples submitted to the laboratory. The student is required to complete 30-40 cases. The report in every case should include a summary of all tests carried out in other units of the diagnostic laboratory.	2
		CPDG 843	**Diagnostic Clinical Pathology XIV** This course will involve further evaluation of non-mammalian samples submitted to the laboratory. The student is required to complete 30-40 cases. The report in every case should include a summary of all tests carried out in other units of the diagnostic laboratory.	2
		PDG 849 B	**Diagnostic Clinical Pathology Clinics B**	3
			Total	14

5	**Semester 1**	**PDG 859 A**	**Diagnostic Clinical Pathology Clinics A**	3
	Semester 2	**CPDG 851**	**Seminar** (modified) This is a one-hour presentation by the student related to the subject of his/her project.	1
		PDG 853	**Project** (see modified version in CPDG 850 Each student is required under the supervision of a Fellow/Instructor of equivalent qualification to complete satisfactorily a research project in the fifth year. The project in the third year (repeated). The project should be based on a laboratory investigation or a special topic such as a prospective or retrospective study (?) and should make a contribution to the body of knowledge in the field of clinical pathology. The project should lead to a paper suitable for publication in a referred journal.	6
		PDG 859 B	**Diagnostic Clinical Pathology Clinics B**	3
			Total	13

MICROBIOLOGY SPECIALTY/OPTION

Year of Study	Semester	Course Code	Course Title and Description	No of Units
1	**Semester1**	**PMC 810**	**Concepts in Microbial Pathogenesis I** This course is an advanced course reviewing the mechanisms by which bacteria and viruses cause disease. The emphasis is on general concepts and mechanism. Selected agents/infections are used to illustrate the general concepts of microbe-host relationship.	2
		PMC 813	**Concepts in Microbial Pathogenesis II** This course is an advanced course reviewing the mechanisms by which fungi and mycoplasma agents cause disease. The emphasis is on general concepts and mechanism. Selected agents/infections are used to illustrate the general concepts of microbe-host relationship.	2
		PMC 811	**Recent Advances in Immunology I** Lectures should cover general overview of Immunology, detail discussion of general immunologic principles and application to clinical immunology – both in general medicine and disease condition.	2
		PMC 814	**Recent Advances in Immunology II** Lectures should cover in detail, areas of immunology which reflect current interests or controversy. Major concepts in immunology are to be covered.	2
		PMC 819A	**Microbiology Clinics A**	3
	Semester 2	**PMC 812**	**Advances in Bacteriology I** This course focuses on recent advances in the mechanisms of bacterial pathogenesis and molecular biology. Lectures seminars will cover well understood topics in these areas.	2
		PMC 815	**Advances in Bacteriology II** This course focuses on the application of biotechnology for the development of diagnostic reagents and vaccines.	2

		PMC 819B	**Microbiology Clinics B**	3
			Total	14
2	**Semester 1**	**PMC 820**	**Diagnostic Bacteriology I** In this course, the student gains "hands on" experience in clinical veterinary bacteriology. Various bacteria associated with disease conditions in mammalian animals are identified using microscopic (including fluorescent microscopy), culture and biochemical methods. Emphasis is placed on the study of case histories and interpretation of results including antimicrobial susceptibility data. The student should be familiar with new diagnostic techniques and should complete 30-40 cases.	2
		PMC 824	**Diagnostic Bacteriology II** In this course, the student gains "hands on" experience in clinical veterinary bacteriology. Various bacteria associated with disease conditions in non-mammalian animals are identified using microscopic (including fluorescent microscopy), culture and biochemical methods. Emphasis is placed on the study of case histories and interpretation of results including antimicrobial susceptibility data. The student should be familiar with new diagnostic techniques and should complete 30-40 cases.	2
		PMC 821	**Diagnostic Mycoplasmology I** In this course, the student gains "hands on" experience in clinical veterinary mycoplasmology. Various mycoplasmas associated with disease conditions in mammalian animals are known. Different cultural techniques and immunoassays used in the diagnosis mycoplasma are studied. Emphasis is placed on the study of case histories and interpretation of results. The student should be familiar with new diagnostic techniques and should complete 20-30 cases.	2
		PMC 825	**Diagnostic Mycoplasmology II** In this course, the student gains "hands on" experience in clinical veterinary mycoplasmology. Various mycoplasmas associated with disease conditions in non-mammalian animals	2

			are known. Different cultural techniques and immunoassays used in the diagnosis mycoplasma are studied. Emphasis is placed on the study of case histories and interpretation of results. The student should be familiar with new diagnostic techniques and should complete 20-30 cases	
		PMC 829A	**Microbiology Clinics A**	3
	Semester 2	**PMC 822**	**Diagnostic Mycology I** In this course, Lectures include Introduction, Classification, General Characteristics of fungi. Various fungi associated with disease conditions in mammalian animals are identified using culture and microscopy. The student gains "hands on" experience in clinical veterinary mycology. Emphasis is placed on the study of case histories and interpretation of results including antifungal susceptibility data. The student should be familiar with new diagnostic techniques and should complete 20-30 cases.	2
		PMC 826	**Diagnostic Mycology II** In this course, Lectures include Introduction, Classification, General Characteristics of fungi. Various fungi associated with disease conditions in non-mammalian animals are identified using culture and microscopy. The student gains "hands on" experience in clinical veterinary mycology. Emphasis is placed on the study of case histories and interpretation of results including antifungal susceptibility data. The student should be familiar with new diagnostic techniques and should complete 20-30 cases.	2
		PMC 823	**Diagnostic Virology I** In this course, the student gains "hands on" experience in clinical veterinary Virology. Various viruses associated with disease conditions in mammalian animals. Virus isolation and identification using cell/tissue cultures, chick embryo or animals, the detection using immunoassays and their clinical applications. Emphasis is placed on the principle and understanding the approaches to the diagnosis of viral diseases, sterilization, disinfection and bio-safety, sterile	2

			techniques in the collection of samples and processing, packaging and transportation for virus diagnosis. The student should be familiar with new diagnostic techniques and should complete 10-20 cases.	
		PMC 827	**Diagnostic Virology II** In this course, the student gains "hands on" experience in clinical veterinary Virology. Various viruses associated with disease conditions in non-mammalian animals. Virus isolation and identification using cell/tissue cultures, chick embryo or animals, the detection using immunoassays and their clinical applications. Emphasis is placed on the principle and understanding the approaches to the diagnosis of viral diseases, sterilization, disinfection and bio-safety, sterile techniques in the collection of samples and processing, packaging and transportation for virus diagnosis. The student should be familiar with new diagnostic techniques and should complete 10-20 cases.	2
		PMC 829B	**Microbiology Clinics B**	3
			Total	16
3	**Semester 1**	**PMC 830**	**Diagnostic Immunology I** This course covers a variety of immunodiagnostic techniques. The principles of serological techniques and their application to disease diagnosis are discussed. The development of these techniques and their validation is covered in lectures and laboratory sessions.	2
		PMC 833	**Diagnostic Immunology II** The principles of immunohistological testing for both infectious diseases and immunological diseases are discussed with relevant clinical examples. Students should be familiar with other immunochemical tests for immune mediated diseases.	2
		PMC 839A	**Microbiology Clinics A**	3
		PMC 831	**Diagnostic Bacteriology III** This course will focus on the roles and importance of microbes in animals and human health. Bacterial morphology, Growth	2

			curves, Antiseptics, disinfectants, Antibiotics, Bacteriostatic agents and their uses. Recent advances and developments in bacteriology.	
		PMC 834	**Diagnostic Bacteriology IV** This course will focus on the biology of micro-organisms including microbial structures and functions, growth and its control. Microbial genetics and protein production. The use of DNA sequences, nucleic acid detection tests used in veterinary diagnosis, aetiology, evolution and taxonomy.	2
		PMC 839A	**Microbiology Clinics A**	3
	Semester 2	**PMC 832**	**Diagnostic Bacteriology V** In this course, the student gains "hands on" experience in clinical veterinary bacteriology. Various bacteria associated with disease conditions in mammalian animals are identified using cultural, biochemical, and microscopy (including fluorescent microscopy). Emphasis is placed on the study of case histories and interpretation of results including antimicrobial susceptibility tests. The student should be familiar with new diagnostic techniques and should complete 30-40 cases.	2
		PMC 835	**Diagnostic Bacteriology VI** In this course, the student gains "hands on" experience in clinical veterinary bacteriology. Various bacteria associated with disease conditions in non-mammalian animals are identified using cultural, biochemical, and microscopy (including fluorescent microscopy). Emphasis is placed on the study of case histories and interpretation of results including antimicrobial susceptibility tests. The student should be familiar with new diagnostic techniques and should complete 30-40 cases.	2
		PMC 839B	**Microbiology Clinics B**	3
			Total	12
		PMC 840	**Diagnostic Mycoplasmology III**	2

4			In this course, the student gains “hands on” experience in clinical veterinary mycoplasmology. Various mycoplasmas associated with disease conditions in different mammalian animals are identified using liquid and solid media, microscopy and biochemical methods. Emphasis is placed on the study of case histories and interpretation of results. The student should be familiar with new diagnostic techniques and should complete 20-30 cases.	
		PMC 843	**Diagnostic Mycoplasmology IV** In this course, the student gains “hands on” experience in clinical veterinary mycoplasmology. Various mycoplasmas associated with disease conditions in different non-mammalian animals are identified using liquid and solid media, microscopy and biochemical methods. Emphasis is placed on the study of case histories and interpretation of results. The student should be familiar with new diagnostic techniques and should complete 20-30 cases.	2
		PMC 841	**Diagnostic Mycology III** In this course, the student is taught the Classification, General Characteristics of fungi. Various fungi associated with disease conditions in different mammalian animal species are identified using culture to isolate and microscopy. Fungal diseases of the skin, cutaneous, sub-cutaneous and others are studied. The roles of fungi in Health and diseases are studied. Emphasis is placed on the practical identification study of case histories and interpretation of results including antimicrobial susceptibility data. The student should be familiar with new diagnostic techniques and should complete 20-30 cases.	2
		PMC 845	**Diagnostic Mycology IV** In this course, the student is taught the Classification, General Characteristics of fungi. Various fungi associated with disease conditions in different non-mammalian animal species are identified using culture to isolate and microscopy. Fungal diseases of the skin, cutaneous, sub-cutaneous and others are studied. The roles of fungi in Health and diseases are studied. Emphasis is placed on the practical identification study of case	2

			histories and interpretation of results including antimicrobial susceptibility data. The student should be familiar with new diagnostic techniques and should complete 20-30 cases.	
		PMC 849A	**Microbiology Clinics A**	3
	Semester 2	**PMC 842**	**Diagnostic Virology III** In this course, the student is taught General introduction to Virology, Nature and chemical composition, Classification, Replication, General characteristics of viral infections. Viral vaccines and viral immunity including interferon and viral interference phenomenon	2
		PMC 846	**Diagnostic Virology IV** In this course, various viruses associated with disease conditions in animals. Isolation and identification using cells/tissue cultures, chick embryo or animals and their detection using immunoassays. Emphasis is placed on the understanding the approaches to the diagnosis of viral diseases, Selected clinical cases are used to familiarize the laboratory results. Current trends in diagnostic virology, serology and vaccinology are covered. The student should be familiar with new diagnostic techniques and should complete 10-20 cases.	2
		PMC 839B	**Microbiology Clinics B**	3
			Total	12
5	**Semester 1**	**PMC 850**	**Project** Each student is required under the supervision of a Fellow/instructor of equivalent qualification to complete satisfactorily a research project in the fifth year. The project in the third year. The project should be based on a laboratory investigation or a special topic such as a prospective or retrospective study and should make contribution to the body of knowledge in the field of microbiology. The project should lend to a paper suitable for publication in a referred journal.	6
		PMC 859A	**Microbiology Clinics A**	3

	Semester 2	**PMC 851**	**Seminar** This is a one-hour presentation by the student related to the course and clinical exposure and the subject of his student project.	2
		PMC 859B	**Microbiology Clinics B**	3
			Total	11

PARASITOLOGY SPECIALTY/OPTION

Year of Study	Semester	Course Code	Course Title and Description	No of Units
1	**Semester 1**	**PPA 810**	**Principles of Veterinary Parasitological Diagnosis I** This course deals with the evolution of parasitological techniques used in diagnosis, our parasitological heritage, immunodiagnosis and determination of seroprevalence of parasitic infections. Lectures and practical on DNA probes and ELISA.	2
		PPA 813	**Principles of Veterinary Parasitological Diagnosis II** This course deals with preparation of hyper-immune sera; antigens and their titration for use in ELISA. Uses of ELISA in epidemiological investigations and diagnosis of some common parasitic diseases of domestic animals. Examples from arthropod, helminth and protozoal infections.	2
		PPA 811	**Emerging Veterinary Parasitic Diseases I** This course deals with species, genetics and evolution of parasites. The impact of global warming/climate change on the ***emergence*** and ***re-emergence*** of parasitic diseases of man and animals.	2
		PPA 814	**Emerging Veterinary Parasitic Diseases II** This course deals with changes in sensitivity/resistance to existing chemotherapeutic agents. Its potential influence on the emergence of new parasitic infections	2
		PPA 819A	**Parasitology Clinics**	3
	Semester 2	**PPA 812**	**Parasitic Zoonotic Diseases I** This course deals with protozoan, helminth, arthropod and pentastomid zoonotic diseases of mammalian animals, their diagnosis, epidemiology, with particular reference to their prevalence, incidence, modes/cycles of transmission, factors influencing transmission and spread, Examples of some national control programmes for major zoonotic diseases from different parts of the world.	2
		PPA 815	**Parasitic Zoonotic Diseases II**	2

			This course deals with protozoan, helminth, arthropod and pentastomid zoonotic diseases of non-mammalian animals, their diagnosis, epidemiology, with particular reference to their prevalence, incidence, modes/cycles of transmission, factors influencing transmission and spread, Examples of some national control programmes for major zoonotic diseases from different parts of the world.	
		PPA 819B	**Parasitology Clinics B**	3
			Total	14
2	**Semester 1**	**PPA 820**	**Advances in Veterinary Protozoology I** This course is an in-depth study of recent advances in the knowledge of the major protozoan parasites of mammalian animals. It covers a variety of topics including developmental cycles, pathogenicity immunogenicity, diagnostic procedures and epidemiology of important protozoal and rickettsial infections of animals. The changing landscape of trypanotolerance in dwarf breeds of ruminants in sub-Saharan Africa. Trypanosome–elicited immune-suppression; its aetiology/mechanisms, the influence of host genetics and concurrent helminth infections.	2
		PPA 823	**Advances in Veterinary Protozoology II** This course is an in-depth study of recent advances in the knowledge of the major protozoan parasites of non-mammalian animals. It covers a variety of topics including developmental cycles, pathogenicity immunogenicity, diagnostic procedures and epidemiology of important protozoal and rickettsial infections of animals. The changing landscape of trypanotolerance in dwarf breeds of ruminants in sub-Saharan Africa. Trypanosome–elicited immune-suppression; its aetiology/mechanisms, the influence of host genetics and concurrent helminth infections.	2
		PPA 821	**Advances in Veterinary Entomology I** This course is an in-depth study of recent advances in the knowledge of the major arthropod parasites of mammalian animals. It covers a variety of topics including life cycles, vector biology and management of vector-borne diseases.	2

		PPA 825	**Advances in Veterinary Entomology II** This course is an in-depth study of recent advances in the knowledge of the major arthropod parasites of non-mammalian animals. It covers a variety of topics including life cycles, vector biology and management of vector-borne diseases.	2
		PPA 829A	**Parasitology Clinics A**	3
	Semester 2	**PPA 822**	**Advances in Veterinary Helminthology I** This course is an in-depth study of recent advances in the knowledge of the major helminth parasites of mammalian animals. It covers a variety of topics including developmental cycles, pathogenicity, immunogenicity, diagnostic procedures epidemiology, with emphasis on factors which influence the incidence, transmission and spread of infections, and control of helminthic diseases in traditionally and intensively managed livestock Recent advances in the development of helminth parasite vaccines and parasite-resistant genotypes of livestock.	2
		PPA 824	**Advances in Veterinary Helminthology II** This course is an in-depth study of recent advances in the knowledge of the major helminth parasites of non-mammalian animals. It covers a variety of topics including developmental cycles, pathogenicity, immunogenicity, diagnostic procedures epidemiology, with emphasis on factors which influence the incidence, transmission and spread of infections, and control of helminthic diseases in traditionally and intensively managed livestock Recent advances in the development of helminth parasite vaccines and parasite-resistant genotypes of livestock.	2
		PPA 829B	**Parasitology Clinics B**	3
			Total	14
	Semester 1	**PPA 830**	**Parasite Immunology I** This course covers immune responses to major parasitic infections of domestic mammalian animals. Examples of immunological responses which lead to either host pathology or to protection and their underlying mechanisms . Immunological techniques commonly used for the laboratory	2

3			diagnosis of parasitic infections of the domestic animals. Immunochemical tests for immune mediated parasitic diseases.	
		PPA 833	**Parasite Immunology II** This course covers immune responses to major parasitic infections of non-mammalian domestic animals. Examples of immunological responses which lead to either host pathology or to protection and their underlying mechanisms . Immunological techniques commonly used for the laboratory diagnosis of parasitic infections of the domestic animals. Immunochemical tests for immune mediated parasitic diseases.	2
		PPA 831	**Diagnostic Veterinary Protozoology and Rickettsiology I** In this course, the student gains “hands-on” experience of laboratory and other techniques commonly used for the diagnosis of protozoan and rickettsial infections and diseases of mammalian animals, including microscopy, in-vitro/in-vivo culture and maintenance of parasites, enzymes immunoassays and IFAT Emphasis will also be placed on laboratory practice, interpretation of laboratory reports and study of case histories. Students should be familiar with new diagnostic techniques and should complete and report on at least 20 hospital and field cases.	2
		PPA 834	**Diagnostic Veterinary Protozoology and Rickettsiology II** In this course, the student gains “hands-on” experience of laboratory and other techniques commonly used for the diagnosis of protozoan and rickettsial infections and diseases of non-mammalian animals, including microscopy, in-vitro/in-vivo culture and maintenance of parasites, enzymes immunoassays and IFAT Emphasis will also be placed on laboratory practice, interpretation of laboratory reports and study of case histories. Students should be familiar with new diagnostic techniques and should complete and report on at least 20 hospital and field cases	2
		PPA 839A	**Parasitology Clinics A**	3
		PPA 832	**Diagnostic Veterinary Parasitology I**	2

	Semester 2		This course covers laboratory aspects of diagnostic Veterinary Clinical Helminthology. It focuses on choice/selection of appropriate diagnostic samples and specimens, their methods of collection, packaging and transportation to the laboratory, short-term preservation and storage in the laboratory and subsequent examination using appropriate techniques. The range of specimens/samples commonly used in diagnostic clinical Veterinary Parasitology(including blood, urine, tissues and cerebrospinal fluid).	
		PPA 835	**Diagnostic Veterinary Parasitology II** This course covers laboratory aspects of diagnostic Veterinary Clinical Protozoology and Entomology. It focuses on choice/selection of appropriate diagnostic samples and specimens, their methods of collection, packaging and transportation to the laboratory, short-term preservation and storage in the laboratory and subsequent examination using appropriate techniques. The range of specimens/samples commonly used in diagnostic clinical Veterinary Parasitology(including blood, urine, tissues and cerebrospinal fluid).	2
		PPA 839B	**Parasitology Clinics B**	3
			Total	14
4	**Semester 1**	**PPA 840**	**Diagnostic Veterinary Entomology I** In this course, the student gains “hands on” experience in clinical veterinary entomology. Various parasitic arthropods associated with disease conditions in mammalian animals are identified using microscopic and histological methods. Emphasis is placed on the study of case histories and interpretation of laboratory results and students should be conversant with xenodiagnosis. The students should also be familiar with new diagnostic techniques and should complete and report on at least 10 cases.	2
		PPA 842	**Diagnostic Veterinary Entomology II** In this course, the student gains “hands on” experience in clinical veterinary entomology. Various parasitic arthropods associated with disease conditions in non-mammalian animals are identified using microscopic and histological methods.	2

			Emphasis is placed on the study of case histories and interpretation of laboratory results and students should be conversant with xenodiagnosis. The students should also be familiar with new diagnostic techniques and should complete and report on at least 10 cases.	
		PPA 849A	**Parasitology Clinics A**	3
	Semester 2	**PPA 841**	**Diagnostic Veterinary Helminthology I** In this course, the student gains "hands on" experience in clinical veterinary helminthology. Various helminth parasites associated with disease conditions in mammalian animals are identified using coproscopy and microscopic, in-vitro culture of helminth eggs and immunodiagnostic methods. Emphasis is placed on laboratory practical, interpretation and reporting of laboratory results and field investigation of naturally occurring helminthoses. . Students should also complete at least 20 cases.	2
		PPA 843	**Diagnostic Veterinary Helminthology II** In this course, the student gains "hands on" experience in clinical veterinary helminthology. Various helminth parasites associated with disease conditions in non-mammalian animals are identified using coproscopy and microscopic, in-vitro culture of helminth eggs and immunodiagnostic methods. Emphasis is placed on laboratory practical, interpretation and reporting of laboratory results and field investigation of naturally occurring helminthoses. . Students should also complete at least 20 cases.	2
		PPA 849B	**Parasitology Clinics B**	3
			Total	10
	Semester 1	**PPA 850**	**Project** Each student is required under the supervision of a Fellow/instructor of equivalent qualification to complete satisfactorily a research project in the fifth year. The project in the third year. The project should be based on a laboratory study or field investigation of an important problem in Veterinary parasitology and should make contribution to	6

5			existing body of knowledge in the subject. The project should lead to at least a paper suitable for publication in a reputable referred journal.	
		PPA 859A	**Parasitology Clinics A**	3
	Semester 2	**PPA 851**	**Seminar** This is a one-hour presentation by the student related to the course and clinical exposure and his student's project.	1
		PPA 859B	**Parasitology Clinics B**	3
			Total	11