Study Guide

Bachelor of Science with Honours Medical Virology - HonsBSc (Medical Virology)

Module Code 43745-778



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INTRODUCTION TO THE FACULTY OF HEALTH SCIENCES, UNIVERSITY OF STELLENBOSCH

The vision and mission of the Faculty of Health Sciences

Vision

The Faculty of Health Sciences of Stellenbosch University is recognised for its indispensable leadership in the field of health sciences in Africa and for the value it adds internationally.

Mission

The Faculty of Health Sciences of Stellenbosch University is committed to the goal of optimal health in Southern Africa by:

- developing, in the context of a learning culture, independent professionals capable of making a worthwhile contribution to the community;
- contributing to new knowledge in the field of health sciences by means of research that is relevant to Africa; and
- adding value to the broad community through participation and service delivery.

1 Bachelor of Science with Honours in Medical Virology / HonsBSc (Medical Virology) Programme

1.1 Overview

Mission statement: The Division of Medical Virology of the University of Stellenbosch is recognised as a leader in the field of viral diagnostics and virological research in South Africa, and for the contribution it makes internationally. The HonsBSc (Medical Virology) programme forms part of an effort to develop a learning culture for students and researchers who can make a worthwhile contribution in the field of basic and molecular virology and viral immunology.

The course is in consistence with the HEQC's Programme Accreditation criteria and has been approved and re-accredited at all required levels within the university.

The programme will be presented in English and/or Afrikaans, depending on the preferred language of the students.

1.2 Name of programme:

Bachelor of Science with Honours Medical Virology - Code 43745-778

1.3 Admission and selection requirements

The Virology postgraduate programme committee selects prospective students on the basis their June average mark in their final BSc year and a short interview. To qualify, applicants must be in their final year BSc with Virology as a major subject, but can also include majors in Microbiology, Biochemistry, Genetics, or similar. The average percentage for both June and December examinations should be greater than 60%. BTech degrees will be considered on condition that the candidate fulfils all the requirements defined by the University as stipulated in the yearbook. There is no set number of students that will be accepted and will depend on the availability of projects and funding.

1.4 Programme structure and contents

1.4.1 Description of the programme

Faculty: Health Sciences
Department: Pathology
Division: Medical Virology

Type of programme: Theoretical and practical; 1 year

NKR level: 7

Qualification type: H

Qualification sub-type: Scientiae (Sc)

Qualification specification: Medical Sciences (Medical Virology)

1.4.2 Aims of the programme

a. To train selected students to work and think independently as health scientists, researchers and academics in the South African context.

- b. To provide specialised subject knowledge within the field of Medical Virology. This includes the development of a solid theoretical knowledge and experimental skills required to work creatively on a defined research project.
- c. To offer specialised study for postgraduate students to provide the necessary basis to proceed to Masters and Doctoral degrees or to enter the job market directly.
- d. To address the urgent need for thoroughly qualified health scientists to ensure South Africa's long term competency in the fields of Health Sciences training and research at a tertiary and trendsetting level, and to exploit new opportunities as they emerge.
- e. To develop a culture of continuous staff training, as all departmental and divisional staff members are encouraged to actively participate in and contribute to this course.
- f. To provide a platform for Intern Scientist training as required by the HPCSA. HonsBSc graduates who wish to pursue a career as a medical scientist in Medical Virology can apply for the limited number of Intern Scientist positions available and complete the training if successful. Alternatively, students can register for an MSc degree upon successful completion of the HonsBSc (Medical Virology) degree.

1.4.3 Course code and credits

43745-778 (120)

Module details

Name of module: Theory of Medical Virology

Department / Division offering module: Pathology / Medical Virology

Time period: yearly

Code: 771 NKR level: 7 Language: English Compulsory Mainly theoretical

Credits: 60

Name of module: Practical Research Medical Virology

Department / Division offering module: Pathology / Medical Virology

Time period: yearly

Code: 772 NKR level: 7

Language: Bilingual

Compulsory Mainly practical Credits: 60

1.4.4 Course modular layout and assessment

a. Theoretical Module (60 Credits / 50%) – 11129-771

i. Continuous Assessment and Small Assignments	
ii. Mid Year Exam	20%
iii. Final Exam (written and oral)	20%
b. Practical Module (60 Credits / 50%) – 11119-772	
i. Portfolio and Rotation Lab Book	2%
ii. Project Work Book, Evaluations (Supervisor / Senior Panel / Postgrad Chair)	8%
iii. Mini Thesis	30%
iv. Assignments and Seminars	10%

1.5 Completion of the course

Students need to pass (>50%) both modules. If a student obtains 45-49% in either module, provision may be made to repeat the failed module or parts thereof. If a student obtains less than 45% in either module, no degree will be awarded unless proof of exceptional circumstances is provided and submitted to the divisional postgraduate programme committee for consideration. A student achieving >75% overall may be recommended for distinction by the oral examination committee.

1.6 Course details

1.6 1 Timelines (these are provisional dates and may change if circumstances warrant)

- a. 23 January 2012: Report to Medical Virology and commencement of programme
- b. 23 January 3 February 2012: Orientation
- c. 6 February 2012: Start of lectures
- d. 10 February 2012: Project Selection and Bursary Application
- e. 2 May 31 October 2012: Research Project and preparation of Mini Thesis
- f. 31 May 2012: Mid Year Exam
- g. 2 November 2012: Submission of Mini Thesis
- h. 9 November 2012: Final Exam
- i. 16 November 2012: Oral Exam

Most activities are organised for the Honours students at fixed times (lectures, tutorials, laboratory skills rotation etc) and some have a fixed deadline (assignments, exams etc). You need to be able to manage the various activities for yourself. You are expected to attend specific lectures and meetings

in the Division. On Tuesday mornings, there is a Division meeting, which is followed by a lecture of general interest and attended by all diagnostic and research staff. Wednesday mornings are reserved for Research meetings, which is mainly attended by research staff and students. This will also be the timeslot where you will present your Journal Clubs and Seminars. Remember, all lectures that are presented at these two meetings, are important for your exams. Special lectures are often organised on short notice and you will be informed about it.

Generally, Stellenbosch University student holidays apply, but this must be agreed with your project supervisor. You need to fill in leave forms and let their supervisor know if they are sick and will not be in the office. You furthermore need to indicate your presence / absence on the board in the secretary's office. In the case of an unanticipated absence, you must inform either the secretary, the supervisor, and/ or the course coordinator telephonically. You are expected to be in the Division from 08:00 until 16:00 every working day.

1.6 2 Orientation

Duration: 23 January - 3 February 2012

This orientation should provide you with knowledge of basic work environment procedures and documents of the Medical Virology environment. You will have access to the department during normal working hours. The department will provide basic computer facilities and shared office space for all HonsBSc students. The facilities in GERGA and the library on 3rd floor can also be used after hours. You should adhere to all other general departmental rules and regulations at all times.

Outcomes:

- Have a sound knowledge of all relevant matters pertaining to a laboratory environment in general and those specific to the Division in Virology Tygerberg
- Be able to work safely and efficiently

Activities:

- Obtain access card; Gerga access; SUN registration
- Read the Virology orientation document, quality manual, safety manual, etc.
- Familiarisation with SANAS 'accreditation' activities
- Check Hepatitis B and other immune status go to Student Health (vaccinate if required)
- Familiarisation with safety and evacuation procedures as part of the Biosafety lecture with fire drills at least twice per year
- Benchmark test on basic undergraduate knowledge

1.6 3 Medical Virology theory

Duration: February to October

Outcomes:

Build sound knowledge in Immunology, Molecular Virology, General Virology and Diagnostics

Activities:

- Review literature and develop insight in the principles and application of medical virology
- Attend and participate in divisional meetings: division meetings, research meetings, journal clubs compulsory

- Attend and participate in registrar and MedTech tutorials / lectures provided in the division optional
- Attend and participate in non-departmental activities, such as the Interactive Immunology Forum, meetings of the Experimental Biology Group and Faculty of Health Sciences Annual Academic Day
 optional
- Capture all activities in a personal portfolio

Recommended textbooks:

- L Collier & J Oxford: Human Virology 3rd Edition. 2006 Oxford University Press (available from the library)
- AJ Zuckerman, JE Banatvala, BD Schoub, PD Griffiths & P Mortimer (eds): Principles and Practice of Clinical Virology, 6th Edition. 2009 John Wiley & Sons Ltd (available as hard copy and e-book from the library)
- A number of additional ebooks are available from the library: www.sun.ac.za/library

Assessment: Written examination in November

1.6.4 Continuous training and small group discussions

Duration: February to October

Outcomes: Obtain knowledge in topics relevant to the course, such as (but not limited to):

- Biosafety
- Equipment
- Calculations and concentrations
- General Lab Techniques, incl Pipetting and pipette maintenance
- How to read a paper and present a journal club
- How to write a paper
- Literature searches
- Referencing
- Endnote / Refworks / Mendely
- General principles of ethics
- Good laboratory practice
- Time management
- Word processing in Microsoft Word
- Powerpoint presentations in Microsoft Powerpoint
- Databases and basic descriptive statistics in Microsoft Excel
- Introduction to Disease Processes, based on MBChB lectures

Activities:

- Attendance of courses (to be prescribed)
- Review literature and develop insight in the principles and application of prescribed topics
- Self-study or small group study
- Capture all activities in a personal portfolio

Assessment: Mini-assignments

1.6.5 Mid-year examination

This exam will cover all the lectures and practical training to date. Questions can include both theory and practical aspects of the course. The mid-year examination mark will contribute 20% towards the final mark for the Theoretical Module.

1.6.6 Assignments and seminars

Duration: February to October

Outcomes:

- Review literature and develop insight in the principles and application of a specific research topic
- Develop written and oral presentation skills
- Learn to structure content: e.g. introduction, materials and methods, results, discussion, conclusion
- Define scientific concepts: e.g. develop arguments logically, answer questions competently, etc
- Develop scientific language and presentation: e.g. presentation skills, explanation of results, etc
- Assure quality and professionalism of presentation
- Learn computer skills necessary for written and oral presentation
- Understand the concept of plagiarism and avoid plagiarism

Activities:

- Presenting seminars (General topics x 2; Project proposal, progress and final results; Journal clubs x 2)
- Written assignments (General topics x 2, Project proposal)

Assessment: Marking by all senior staff according to specific marking sheets

1.6.7 Practical research project

You will be introduced to the different available Honours projects during the first week of February and you have to choose a project and supervisor.

Objectives: Develop the skills necessary to perform independent research on a research project and present your results and interpretation in the form of a Mini-thesis.

Duration: May to October

Outcomes:

- Learn the practical skills and understand the techniques required for the project
- Learn to independently apply these skills / techniques
- Learn to troubleshoot results if necessary
- Learn how to manage time and plan experiments
- Learn to focus in order to answer the initial research hypothesis
- Learn to evaluate and present results
- Review literature and develop insight in the principles and application of the research topic
- Learn to write up the results of a research project
- Learn to orally present and discuss results of a research project

Activities:

- Regular laboratory work under the guidance of the supervisor or nominated trainer
- Regular meetings with the supervisor
- Attendance of laboratory meetings and progress updates
- Writing of a mini-thesis
- Oral presentation and discussion of research results

Assessment: Write-up of a mini-thesis according to specific guidelines. This will be examined by two lecturers / scientists who were not involved in the study. Weighting of the different sections of the mini-thesis will be as follows:

-	Abstract	5%
-	Introduction	15%
-	Materials and Methods	20%
-	Results	20%
-	Discussion and Conclusion	20%
-	References	10%
-	General Layout and Impression	10%

Guidelines for the mini-thesis are attached.

1.6.8 Final examination

Duration: 9 November

The final written examination counts 100 marks and is 3 hours long. It is divided into General Virology (40%), Molecular Virology (30%) and Viral Immunology (30%). The exam paper is evaluated by an internal moderator (the course coordinator), as well as an external moderator and Head of the Division. Exam papers will be in both English and Afrikaans and the student may answer in English or Afrikaans. Sick certificates have to be provided for non-attendance and the postgraduate programme committee will decide on a course of action in such cases. No calculators and electronic devices (such as cellular phones) are allowed in the examination hall. Deliberate misconduct or cheating will be discussed by the postgraduate programme committee with a view to imposing adequate sanctions as per University regulations.

The oral examination will be one week after the written examination. Examiners include a panel consisting of the external moderator and other members of the postgraduate programme committee.

Assessment: The oral examination carries no mark on its own, but usually decides on borderline cases (*; 50%, 60% and 75%). The final mark will be decided on by the committee and will then be submitted electronically. If the student fails the course, the committee will make recommendations whether the student will fail outright or whether parts of the course will have to be repeated.

- * > 50% pass
 - > 60% important for many bursaries and a requirement for admission to MSc (Virology Masters)
 - > 75% distinction

2. Division of Medical Virology, Faculty of Health Sciences, University of Stellenbosch

2.1 Department of Pathology - overview

Prof Johann Schneider is the Executive Head of the Department.

The Department provides excellent teaching, training, research and service in pathology.

Mission for the Department of Pathology at the University of Stellenbosch and NHLS Tygerberg:

- Provide excellent teaching and training in pathology.
- Conduct relevant and sustainable research of the highest quality.
- Support and provide value-added quality pathology services.
- Collaborate in close partnership with other academic institutions, the community, and the pathology service platform at a regional and national level.
- Promote diversity at all levels

2.2 Division of Medical Virology - overview

See the departments own web page for more detail: http://www.sun.ac.za/virology.

The Division of Medical Virology is one of a number of divisions that form the Department of Pathology. Pathology is one of the Departments at the Faculty of Health Sciences (FHS) of Stellenbosch University (SU); at the same time, most Pathology divisions also form the Tygerberg Business Unit of the National Health Laboratory Service (NHLS). Staff members are employed either by the University of Stellenbosch or the NHLS or through research grants. Medical Virology has University and NHLS involvement through pre- and postgraduate training and research, as well as delivering of routine diagnostic services.

2.2.1 Research initiatives and projects

Research activities are not limited to HIV. Research areas are the genomic diversity and molecular epidemiology of HIV, antiretroviral drug resistance, various immunological aspects of HIV infection, opportunistic viral infections in HIV-infected patients, and viral diagnostics. Research is also done on other viruses, such as Hepatitis B, CMV, Hantaviruses, etc.

The major research focus areas are:

- Immunology

Dr Richard Glashoff, Medical Scientist, Immunology Dr Corena de Beer, Medical Scientist, Immunology

- Molecular virology

Prof Susan Engelbrecht, Medical Scientist, Molecular Virology

- Antiretroviral drug resistance

Dr Gert van Zyl, Consultant Virologist Prof Wolfgang Preiser, Head of Division Prof Susan Engelbrecht, Medical Scientist

- Other

Dr Monique Andersson, Researcher and HIV clinician Prof Wolfgang Preiser, Head of Division

Viral diagnostics

Dr Gert van Zyl, Consultant Virologist Prof Wolfgang Preiser, Head of Division Dr Monique Andersson

2.2.2 Diagnostic service (NHLS)

The diagnostic laboratory offers a large repertoire of virological laboratory tests including virus isolation, serology and state-of-the-art nucleic acid detection. Its SANAS-accredited (since July 2002; currently according to ISO 15198) diagnostic section is part of NHLS Tygerberg and serves Tygerberg Hospital and its referral area in the Western Cape Province. It takes part in four quality assessment schemes, run by NEQAS, QCMD, VQA, and DBS. It is also the provincial testing laboratory for the approximately 10,000 samples tested annually as part of the HIV and syphilis antenatal survey.

2.2.3 Undergraduate teaching and training

The Division is involved with lectures and practical sessions for MBChB students, as well as lectures to Natural Health Science students from the University of the Western Cape. In addition to the module on Essentials of Disease Processes consultants also lecture in clinical modules in the 3rd, 4th and 5th years of the MBChB programme. The Division is involved with a practical module in the 4th year where students visit the laboratories and perform case studies that involve all the pathology disciplines.

Members of the Division are coordinators and organisers of the comprehensive Infections and Immunology module of the MBChB programme at Stellenbosch University.

2.2.4 Virology Personnel Chart

Title & Name	Highest Academic Qualification	Position	Contact Details
Prof Wolfgang Preiser	Dr. med. habil.	Head of Division (HOD)	Tel: 021 938 9353 preiser@sun.ac.za
Mrs Sal van Zyl	ND Medical Secretarial	Division Secretary; Secretary: Virology Postgraduate Programme Committee	Tel: 021 938 9354 Fax: 021 938 9361 sal@sun.ac.za
Prof Susan Engelbrecht	PhD	Associate Professor; Chief Medical Scientist	Tel: 021 938 9357 susanen@sun.ac.za
Dr Richard Glashoff	PhD	Senior Medical Scientist	Tel: 021 938 9744 rglas@sun.ac.za
Dr Corena de Beer	PhD	Chair: Virology Postgraduate Programme Committee; Contact person: Hons Programme; Senior Medical Scientist	Tel: 021 938 9453 cdeb@sun.ac.za
Dr Gert van Zyl	MMed FCPath	Lecturer; Virology Consultant	Tel: 021 938 9691 guvz@sun.ac.za
Dr MI Andersson	FRCPath	Senior Researcher; HIV Clinician	Tel: 021 938 9356 andersson_m@sun.ac.za
Ms Tania Stander	DMT (Virology)	Laboratory Manager	Tel: 021 938 9355 ts2@sun.ac.za
Dr Leana Maree	MB, ChB	Registrar: Medical Virology Student representative from 2010	Tel: 021 938 9347 leana@sun.ac.za
Mr Jan de Wit	ND Med Tech (Chem Path)	Research assistant and contact for technical assistance	Tel: 021 938 9057 jdewit@sun.ac.za

2.3 Postgraduate teaching and training in Medical Virology

The Division of Medical Virology conducts postgraduate training for registrars (MMed students) in Medical Virology, Medical Microbiology and Clinical Pathology. It also offers HonsBSc, MSc and PhD degrees in Medical Virology.

It also trains student intern medical technologists and has been accredited by the HPCSA for Intern Medical Scientist training.

2.3.1 Facilities and equipment for postgraduate science student training

Facilities in the division include:

- Library: The Virology library (room 8070) holds some textbooks and journals. For material not available here please check the Health Sciences Library.
- Seminar room: All divisional meetings, seminars, tutorials, etc, are held in the seminar room (room 8079) unless otherwise indicated. The seminar room is equipped with a computer and a data projector for presentations.
- Student office: Postgraduate science students are accommodated in three different rooms with basic computer facilities. Printing facilities are available in the Division through a SafeCom printer.
- A tearoom is available to all Virology staff and students.
- The Division of Medical Virology is fitted with modern laboratory facilities (8106 Immunology Laboratory, 8114 Tissue culture laboratory, 8098 Main Molecular Laboratory, 8087 Molecular Laboratory, 8029 Biosafety Level 3 Laboratory [restricted area], etc). These are equipped with modern laboratory equipment, such as PCR cyclers, real-time PCR cyclers, ABI sequencers, BD FACS Calibur, Zeiss KS ELISPOT reader etc. Other equipment is available in the diagnostic section.

2.3.2 The Virology postgraduate programme committee

The Virology postgraduate programme committee consists of:

- a chairperson (currently Dr C de Beer)
- a secretary (currently Mrs S van Zyl)
- a student representative (currently Dr L Maree)
- other senior members of the division (see personnel chart)

Acceptance of prospective postgraduate students: Prospective Honours students usually submit a Curriculum Vitae and a letter of motivation. The committee introduces the student to the division. In a brief interview the committee will form an opinion regarding the student on issues such as general impression, previous education, funding opportunities, computer literacy and language proficiency. Preference is usually given to South African residents coming from 'previously disadvantaged' backgrounds.

Student feedback: All postgraduate students are encouraged to give feedback on the postgraduate programme to the course coordinator or student representative in order to continue to improve the programme.

3. Important links and facilities

3.1 Postgraduate Office

Postgraduate office Tygerberg handles all postgraduate activities. They offer:

- academic information,

- arrange interaction between students,
- serve as a link between students and supervisors,
- provide students with skills development opportunities (capacity building),
- provide research advice,
- provide information regarding bursaries and funding opportunities,
- assist new postgraduate students,
- promote interaction between divisions

They provide support and guidance to existing, as well as prospective postgraduate students with specific focus on efficient administration, social wellbeing, skills development and attention to all related academic matters in order to ensure the success of students.

Contact

Mrs Genevieve Fillis Enquiries: 021 938 9056 E-mail: gfillis@sun.ac.za

3.2 Office for International Liaison / Elective Studies

Co-ordinator: Postgraduate International Students; International Visitors

Mrs Rachel Pullen Tel: +27 21 938 9086 E-mail: Rachel Pullen

3.3 Computer users area (GERGA / MEDCA)

http://rga.sun.ac.za/gerga/

The Faculty of Health Sciences ensures that its students and staff have access to the most recent and relevant information technology. The Computer Users Area on the Tygerberg Campus is situated on the 3rd floor of the Teaching Block.

3.4 Health Sciences Library

http://library.sun.ac.za/eng/Tygerberg_Library/Info_resources.html

The Health Sciences Library is one of the six branch and satellite libraries of the US Library Service. It serves the Faculty of Health Sciences and is situated on the 3rd floor of the Clinical building at the Tygerberg campus.

Health Sciences Library PO Box 19091 Tygerberg 7505 Cape Town South Africa

Tel.: +27 (0) 21 938 9368 (General enquiries)

Fax: +27 (0) 21 933 7693 E-mail: <u>healthinfo@sun.ac.za</u>

3.5 Centre for Student Counselling and Development (CSCD) - 24-HOUR CRISIS SERVICE:

Stellenbosch Campus: 082 5570880 or 021 8088858 Tygerberg Campus: 082 5570881 or 021 9389590

E-mail: cdc@sun.ac.za

http://www0.sun.ac.za/cscdnew/lang/en or http://www0.sun.ac.za/cscdnew/lang/en

The service is provided by professionally trained staff who are linked to the CSCD and who can offer psychological aid in times of crisis and trauma at short notice.

Psychological crises include the following: death of someone close to you, suicide, accidents, rape, sexual assault, depression, divorce, stressful situations/examinations, serious problems in a relationship, etc.

- Your therapist will treat all information that you share with him/her as confidential.
- Your therapist is there to listen to you, to help you attain your goals and to help solve your problems.
- Your therapist will not tell you what you should do, but rather will assist you in finding the possible solutions to your problems and in considering carefully those solutions.