

This document describes the National Curriculum for Medical Biological Scientists.
It is important to note the following:

- a) *The National Curriculum serves as core curriculum and prescribe the minimum requirements to pass the Board-approved competency-based examination in the form of a Portfolio of Evidence.*
- b) *Facility-based training program: Every training facility shall develop a facility-based training program containing the minimum requirements as prescribed in this National Curriculum*
- c) *Evidence-based: Evidence of ALL components or elements has to be provided in the form of a Portfolio of Evidence.*
- d) *Use the Guideline for Submission and Assessment of the Portfolio of Evidence to compile the evidence.*
- e) *Assessment: All elements or components of the training program shall be assessed by using a variety of assessment methods.*

It is important that this document be read in conjunction with document CMS A (Policy regarding training of intern medical scientists) which is applicable to all disciplines within Medical Science.

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1. INTRODUCTION

The National Curriculum serves as template for the development of your facility-based internship-training program. All the components prescribed in The National Curriculum shall be reflected as the minimum requirement in your facility-based program and each component, shall be assessed and the method and frequency of assessment shall be clearly indicated.

The evidence of these components shall be used in a structured manner to compile your Portfolio of Evidence. This Portfolio of Evidence serves as a Board-approved competency-based examination. The Guideline for submission and assessment of the Portfolio of Evidence (CMS 02) prescribe the structure of the self-assessment.

2. OVERALL COURSE OUTCOMES

At the end of this internship, you will be able to:

- 2.1 *Recognise and apply* professional conduct and ethical principles.
- 2.2 *Perform the administration and management* of a laboratory in terms of maintaining the quality process, Good Laboratory Practice, laboratory safety and the quality management system)
- 2.3 Apply basic scientific principles and academic knowledge.
- 2.4 Perform laboratory methods in accordance with standard operating procedures and the interpretation of results relevant to a laboratory diagnostic environment.
- 2.5 *Define and apply* research principles, compile a scientific report and present the findings. (Use of database/s and apply bioinformatics).

3. DISCIPLINE-SPECIFIC LEARNING OUTCOMES

Internship determines the overall competency by assessing all the specific learning outcomes. These include:

3.1 Professional conduct and Ethical rules

At the end of this component, you will be able to:

- 3.1.1 *State and apply* the HPCSA Guidelines on Ethical Rules (version available from the HPCSA website – Booklets 1 to 11) <https://www.hpcs.co.za/Conduct/Ethics>.

Assessment: Reading (signature to confirm reading) and apply.

- 3.1.2 *State and apply* the Occupational Health and Safety Act, Compensation for Occupational Injuries and Diseases Act, National Health Act including the regulations of the HPCSA, Labour Relations Act especially the aspects regarding HIV/AIDS and the Human Tissue Act.

Assessment: Reading (signature to confirm reading) and apply.

- 3.1.3 *State and apply* the general guidelines for health researchers and Biotechnology research in South African dealing with patients and patient samples (version available from the HPCSA website – Booklets 13 and 14).

Assessment: Reading (signature to confirm reading) and apply.

3.2 Good Laboratory Practice (GLP) and Laboratory Safety

At the end of this component, you will be able to:

- 3.2.1 *Define and practice of the* correct use of personal protective equipment (PPE).

Assessment: Reading (signature to confirm reading) and apply in practice.

- 3.2.2 *Define and practice the* safe handling, storage and disposal of biological specimens.

Assessment: Reading (signature to confirm reading) and apply in practice.

- 3.2.3 *Define and practice the* safe handling, storage and disposal of chemicals (including radioactive materials where applicable).

Assessment: Reading (signature to confirm reading) and apply in practice.

- 3.2.4 *Identify and practise the* managing of chemical and biological spills (including radioactive materials where applicable).

Assessment: Reading (signature to confirm reading) and apply in practice.

- 3.2.5 *Identify and perform the* fire hazards and safety drills.

Assessment: Reading (signature to confirm reading) and apply in practice.

- 3.2.6 *Identify and locate the* physical and ergonomic hazards.

Assessment: Reading (signature to confirm reading) and apply.

- 3.2.7 *Record and operate in the* safe handling, service and maintenance of equipment.

Assessment: Reading (signature to confirm reading) and apply.

- 3.2.8 *List and demonstrate* exposure to laboratory management and administration in a diagnostic environment.

Assessment: Apply in practice

3.3 Quality Management

At the end of this component, you will be able to:

3.3.1 *Relate to and participate in the laboratory accreditation and audits.*

Assessment: Participation.

3.3.2 Participate in internal and external quality assurance programs.

Assessment: Participation.

3.3.3 *Repeat and perform validation of diagnostic test methods / platforms / kits.*

Assessment: Participation

3.3.4 *List and apply the Standard Operation Procedures (SOP's) and guidelines.*

Assessment: Read and apply.

3.3.5 Record and perform the operation and maintenance of laboratory equipment.

Assessment: Participation.

3.3.6 *Recognise and conclude the identification and resolution of non-conformances.*

Assessment: Participation.

3.4 Scientific and Discipline-Specific Knowledge

At the end of this component, you will be able to:

3.4.1 *List of appropriate textbooks.*

Assessment: Formal assessment

3.4.2 *List and discuss in Journal clubs attended / presented.*

Assessment: Participation

3.4.3 *List and present lectures / seminars / workshops / conferences / courses.*

Assessment: Participation

3.4.4 List and conclude the assignments / case studies completed.

Assessment: Participation

3.5 Competency Training

At the end of this component, you will be able to:

3.5.1 List and perform all practical competencies (including competency levels).

Assessment: Repetitive practical performance with experience.

3.5.2 *Describe* the principle of the test method and apply the most appropriate test method based on patient history and clinical information.

Assessment: Apply in every day bench work.

3.5.3 *Define and perform the troubleshooting* of test methods.

Assessment: Apply in every day practice with appropriate forms (e.g non-conformances, root-cause analysis and trend analysis).

3.5.4 *Identify and apply* the limitations of a test method (e.g. sensitivity and specificity, positive predictive value (PPV) and negative predictive value (NPV)).

Assessment: Method validation

3.5.5 Interpret a finding in clinical practice and result reporting.

Assessment: Patient report (LIS)

3.6 Principles of Research

At the end of this component, you will be able to:

3.6.1 Develop a protocol and apply appropriate published literature (literature review), in your research study.

Assessment: Formal assessment by supervisor/training team.

3.6.2 *Apply* research ethics, in your research study.

Assessment: Formal assessment as part of protocol and scientific report by supervisor/training team.

3.6.3 Identify plagiarism, in the developing of your protocol and scientific report.

Assessment: Formal assessment as part of protocol and scientific report by supervisor/training team.

3.6.4 *Apply for funding and compile a budget, for performing your project.*

Assessment: Formal assessment by supervisor/training team.

3.6.5 *Select and apply biostatistics and / or databases (if applicable), in interpretation of your results/research.*

Assessment: Formal assessment as part of scientific report/patient result

3.6.6 Compile a scientific report to be prepared in the following format:
Abstract (250-300 words), Introduction, Methods, Results, Discussion, Conclusion, References.

Assessment: Formal assessment

3.6.7 *Present your research findings by using a Power Point presentation.*

Assessment: Peer-reviewed assessment (peers from training team)

4. CONTINUOUS ASSESSMENT OF TRAINING

4.1 Formal evidence-based continuous assessments must be performed over the 24-month period, Minimum of 1 annual report should be included in the Portfolio of Evidence.

4.2 All components of the training program must be assessed.

4.3 The method and frequency of assessments must be clearly indicated.

4.4 This is an evidence-based document and will not be accepted without original signatures and dates of each assessment.

4.5 Final exit examination by training department (Head of Training Program / Department). Refer to Policy regarding the training of Intern Medical Scientists (CMS A) for a definition of this examination.

5. ROTATION ROSTER

A schedule or planning roster (over the 24-month period) has to be included in the training program including all the various components of the program (please specify each component) with a period, supervisor and specific laboratory.

6. OUTCOME ASSESSMENT BY A PRESCRIBED BOARD-APPROVED COMPETENCY-BASED ASSESSMENT

- 6.1 The competency-based examination is in the form of the Portfolio of Evidence - Refer to Policy regarding the training of Intern Medical Scientists (CMS A) for a detailed process on the assessment.
- 6.2 A formal outcome-based assessment will be conducted to ensure that the candidate has acquired the necessary skills, academic knowledge and practical competencies outlined in the syllabus.
- 6.3 The Guideline for the submission and assessment of Portfolio of Evidence (CMS 02) must be completed by the intern candidate, supervisor and head of training program.
- 6.4 The Intern Duty certificate, contained in this document shall be completed by the head of the training program and formally approved by the head of the training facility before the Portfolio of Evidence may be submitted to the HPCSA of formal outcome-based assessment – Refer to Guideline for the assessors and moderators of the Portfolio of Evidence (CMS 02) and Policy regarding the training of Intern Medical Scientists (CMS A).
- 6.5 The assessment of the Portfolio of Evidence is an outcome-based assessment and will be based on the evidence compiled in the Portfolio of Evidence, the completed Checklist or Guideline for the submission and assessment of the Portfolio of Evidence.