RCPA
The Royal College of Pathologists of Australasia

FACULTY OF SCIENCE

TRAINEE HANDBOOK 2019

Forensic Science

It is essential to read this Handbook in conjunction with the ***Trainee Handbook – Administrative Requirements*** which is relevant to all trainees. This has information about the College's structure and policies, together with details of requirements for registration, training and examination applications.

TABLE OF CONTENTS

Abbreviations

CbD	Case-based Discussion
CI	Chemical Ionisation
CPDP	Continuing Professional Development Program
CT	Computed Tomography
DNA	Deoxyribonucleic Acid
DOPS	Direct Observation of Practical Skills
DVI	Disaster Victim Identification
EBLP	Evidence Based Laboratory Practice
EI	Electron Impact
GC	Gas Chromatography
GHB	Gamma-Hydroxybutyric acid
FSc	Faculty of Science
FA	Forensic Anthropology
FE	Forensic Entomology
FMB	Forensic Molecular Biology
FT	Forensic Toxicology
FTA	Flinders Technology Associates
HLA	Human Leukocyte Antigen
HPLC	High Performance Liquid Chromatography
ICRC	International Committee of the Red Cross
ISO	International Organization for Standardization
MS	Mass Spectrometry
MSc	Master of Science
NATA	National Association of Testing Authorities
NPAAC	National Pathology Accreditation Advisory Council
PCR	Polymerase Chain Reaction
PhD	Doctorate of Philosophy
QA	Quality Assurance
QC	Quality Control
RCPA	Royal College of Pathologists of Australasia
RFLP	Restriction Fragment Length Polymorphism
SAMHSA	Substance Abuse and Mental Health Services Administration
SNP	Single Nucleotide Polymorphism
SOCO	Scenes of Crime Officer
STR	Short Tandem Repeats

SECTION I

Introduction

The Faculty of Science provides a structured Fellowship program to enable scientists in various areas, including the forensic sciences, to demonstrate competence to a standard specified by the RCPA. In the forensic sciences, the focus is on justice, including investigators and the courts. Thus, in forensic science, the areas of competence for scientists are to:

- Professionally advise investigators, parties to proceedings and the courts on the requirements for investigations, and to carry out these investigations for the justice system as a member of the team providing the forensic science service.
- Maintain safe and effective service through the use of relevant quality assurance and audit tools, to appropriate national standards.
- Undertake scientific research, including the evaluation of scientific literature, to introduce new scientific procedures or solve problems within their field.
- Apply the principles of evidence-based laboratory practice to inform conclusions and opinions.
- Provide innovative and strategic direction to the operation of the laboratory.

The scientist will complete the training requirements specified in the curriculum and will demonstrate competence and attainment of learning outcomes by satisfying all assessment requirements to the standards set by the Faculty of Science, as defined in the curriculum.

Despite public perceptions, forensic science is not a specific discipline practised by an individual. It is a collective term for a number of disciplines being applied to forensic purposes. A forensic purpose is one designed to assist the administration of justice.

Forensic Science within the Faculty of Science comprises a number of disciplines applied to forensic purposes related to forensic medicine. They are: forensic molecular biology, forensic anthropology, forensic toxicology, forensic entomology and forensic mortuary science.

In this Handbook, where the phrase ‘Forensic Science’ is used, depending on the context it either refers to forensic sciences generally, or one of the specific disciplines in forensic science, covered by this Handbook.

Finally, Forensic Mortuary Science is practised in a mortuary and not a laboratory as ordinarily understood. For ease of expression, where the context demands, the use of the word ‘laboratory’ should be read to encompass a mortuary.

General aims and structure of the training program

The general aims of the training program are to provide a structured pathway for scientists working in a Forensic Science context to meet the standards defined by the RCPA of a leading Scientist in their field.

These general aims of the training program relate to three areas of professional activity of a leading scientist, i.e.,

Discipline specific clinical laboratory functions

Research

Innovation, Development and Leadership

The Faculty of Science curriculum in Forensic Science comprises standards in these three areas as follows:

1. Research Standards
   - Demonstrate highly developed skills in research, management of time and resources and communication of outcomes and data, whilst independently developing theoretical concepts, acquiring new knowledge and testing hypotheses in Forensic Science.
2. Forensic Science Laboratory Standards
   - Demonstrate competence in applying the techniques, technology and reporting associated with a Forensic Science laboratory with a broad case-mix.
   - Apply the theoretical and technical expertise in laboratory techniques required to lead the activities of one specialised area of Forensic Science.
3. Innovation, Development and Leadership Standards
   - Apply, implement and evaluate strategies that guarantee quality assurance, compliance, safety and efficient use of resources fundamental to the operation of a Forensic Science laboratory.
   - Demonstrate a commitment to the continual improvement and advancement of Forensic Science.
   - Apply the principles of Evidence Based Laboratory Practice (EBLP) to inform conclusions and opinions.

These standards are elaborated as content areas and specific training outcomes in Section 2 of this handbook. In the Clinical Laboratory standards there are specific content areas and training outcomes for Part I and II. Competence in outcomes achieved by Part I of training should be maintained throughout. It is expected that trainees should achieve the outcomes in the Research Standards and Innovation, Development and Leadership Standards gradually throughout their training.

Trainees, with the assistance of their supervisor, should ensure that they engage in appropriate learning activities to achieve each of the outcomes, and therefore the standard. The Indicators are statements which guide the assessment process, and describe how the Trainee will demonstrate they have met the standard. The assessment policy and specific assessment requirements are detailed in Section III of this handbook.

The total time to complete the training program is normally a minimum of 5 years, except when time credits have been granted by the Chief Examiner on the advice of the Principal Examiner for previous experience through a Training Determination. **Part I** assessment criteria can normally be met and assessed during the third year of training, **Part II** requirements following another 2 years training.

Administrative Requirements

This handbook should be read in conjunction with the ***RCPA Trainee Handbook Administrative Requirements*** document on the College website.

Entry requirements

Trainees should be graduates of a university in Australia or New Zealand with a degree at Australian Qualifications Framework level 7 (minimum) with subjects relevant to the field of pathology. If such a degree is awarded by an overseas tertiary education institution the qualifications should be approved by the College. To enter the program, trainees are ordinarily required to have five (5) years post graduate experience working as scientists in a Pathology related field.

Training requirements

Training must take place in an RCPA accredited laboratory and is limited to the time period for which that laboratory is accredited in each discipline. Details of RCPA accredited laboratories, or how to obtain accreditation, are available through the College website. Please note that ordinarily, a maximum of 4 years is to be spent in any one laboratory over the course of the 5-year training program. Trainees and their supervisors should organise for the trainee to spend up to one year in one or more other accredited laboratories (in Forensic Science multiple accredited laboratories in different disciplines may be located within one centre).

Although the regular training position of a Forensic Science trainee would usually be in a single discipline, trainees should spend at least three months Full Time Equivalent in one or more of the related disciplines by the end of the third year of training. Trainees could usefully spend time in all of the other disciplines, but if the time is not available, then the recommended disciplines for trainees to consider rotating through are set out in the table below. Placements should be arranged in consultation with the supervisor and the College. This interdisciplinary training is a major aim of the curriculum and the assessment policy is aligned with such training. Individuals should contact the College Registrar if any deviations from these requirements are sought.

Recommended training rotations in related disciplines

Major discipline	**Recommended related disciplines**
Mortuary Science	Forensic Toxicology, Forensic Anthropology, Forensic Molecular Biology, Forensic Entomology
Forensic Toxicology	Mortuary Science, Forensic Anthropology, Forensic Entomology
Forensic Anthropology	Mortuary Science, Forensic Molecular Biology, Forensic Entomology
Forensic Molecular Biology	Mortuary Science, Forensic Anthropology
Forensic Entomology	Mortuary Science, Forensic Anthropology

Trainees are responsible to ensure that all forms are submitted by the due dates indicated in the Handbook and the College website

Supervision

All training must be supervised. More than one supervisor can be nominated if Trainees divide the year between two or more unrelated laboratories. The College recommends that any one supervisor be responsible for no more than two Trainees.

Who can be a supervisor?

The supervisor will normally be a Fellow of the RCPA; however non–Fellows may be approved by the Board of Education and Assessment if no Fellow is available. If the Trainee spends significant periods working in an area where the supervisor has no personal involvement, the supervisor must certify that suitable supervision is being provided. The supervisor must also ensure that adequate supervision is arranged in their absence.

In some circumstances shared supervision may be necessary, but there must be a nominated primary supervisor with overall responsibility. Trainees working towards higher academic degrees (e.g. PhD), who find that their research supervisor is not able to be the RCPA training supervisor, should nominate an RCPA Fellow as co-supervisor.

Day-to-day supervision should primarily be the responsibility of a Fellow of the Faculty of Science, however it is appropriate for senior pathology staff with relevant experience to sign off on some workplace based assessments.

The role of the supervisor

Supervisors should devise a prospective training (or research) program, on initial registration and annually. This should be devised in collaboration with the Trainee and submitted to the RCPA. Supervisors should also ensure that the Trainee has sufficient time and opportunities to carry out the required training activities.

Supervisors, and others to whom aspects of training have been delegated, are expected to monitor and provide regular feedback on the development of the Trainee's competence. In addition to the formal meetings with the Trainee which should occur every three months, they should meet regularly with the Trainee; observe their laboratory performance and interaction with seniors, peers, investigators, lawyers and the courts; and review result reporting. This may be delegated to other trainers where appropriate, e.g., when the Trainee is on secondment to another laboratory for a segment of training.

The formal duties of supervisors, such as requirements to report the Trainee's progress to the Board of Education and Assessment, are described in the RCPA Induction Manual for Supervisors and the RCPA policy on the Role of the Supervisor.

Supervisors and Trainees should contact the **College Education Advisor** for assistance with supervision and training issues.

Resources

The resources listed below are not compulsory nor do they necessarily cover all the Forensic Science learning outcomes. Information for examination may come from books, especially in the sub-specialty regions of Forensic Science and journals outside this list. For all books listed, please refer to the latest edition available.

General

Suggested text books

- Kumar V, Abbas A and Fausto N. Robbins and Cotran Pathological Basis of Disease. Philadelphia: Elsevier Saunders.
- Payne-James J, Byard R, Corey T and Henderson C. Encyclopaedia of Forensic and Legal Medicine. 4 Vols. London: Elsevier.
- Ranson D. Forensic Medicine and the Law: An introduction. Melbourne: Melbourne University Press
- British Medical Association. The Medical Profession and Human Rights: Handbook for a changing agenda. London: Zed Books (in association with the BMA).

Other Learning Resources

RCPA Education Online http://www.rcpa.edu.au/Education is updated regularly. Resources include the autopsy and forensic slide repository as well as video presentations.

Mortuary Science

Suggested text books

- Byard RW. Sudden Death in Infancy, Childhood and Adolescence. Cambridge: Cambridge University Press
- Di Maio VJM. Gunshot Wounds: Practical Aspects of Firearms, Ballistics, and Forensic
- Techniques. CRC Press.
- Di Maio VJM, Di Maio D. Forensic Pathology. CRC Press.
- Henssge C, Knight B, Krompecher T, Madea B and Nokes L (eds). The Estimation of the Time Since Death in the Early Postmortem Period, Arnold Publishing.
- Saukko P, Knight B. Knight's Forensic Pathology, Arnold Publishing.
- Finkbeiner WE, Connolly A, Ursell PC, Davis RL. Autopsy pathology A Manual and atlas. Elsevier Health Sciences.
- Vanezis P, Busuttil A (eds). Suspicious Death Scene Investigation. London: Arnold.
- Burton J, Rutty G (eds). The Hospital Autopsy. London: Arnold

Other Learning Resources

- Royal College of Pathologists of the United Kingdom (includes autopsy guidelines)
- Scientific Working Group on Medicolegal Death Investigation (www.swgmdi.org)
- NFSTC (National Forensic Science Technology Centre)
- Code of Practice and Performance Standards for Forensic Pathologists. Home Office Policy
  Advisory Board for Forensic Pathology and The Royal College of Pathologists.
- Guidelines for the Facilities and Operation of Hospital and Forensic Mortuaries. NPAAC. Commonwealth of Australia.
- Guidelines on Autopsy Practice. Report of a working group of The Royal College of Pathologists. The Royal College of Pathologists.
- Sudden Unexpected Death in Infancy: A multi-agency protocol for care and investigation. The report of a working party convened by The Royal College of Pathologists and The Royal College of Paediatrics and Child Health. Chair: The Baroness Helena Kennedy QC.
- Scientific Working Group for Medicolegal Investigation http://www.swgmdi.org/

Forensic Anthropology

- Blau S, and Ubelaker DH (eds.). Handbook of Forensic Anthropology and Archaeology. California : Left Coast Press; 2016
- Buikstra JE, and Ubelaker DH (eds.) Standards For Data Collection from Human Skeletal Remains. Arkansas : Arkansas Archaeological Survey; 1994
- Christensen A, Passalacqua NV, Bartelink EJ. Forensic Anthropology: Current Methods and Practice. Oxford : Academic Press; 2014
- Dirkmaat D (ed.). A Companion to Forensic Anthropology. Oxford : Wiley-Blackwell; 2012
- DiGangi EA, Moore MK (eds.). Research Methods in Human Skeletal Biology. Elsevier; 2013
- Komar DA, Buikstra JE. Forensic Anthropology. Contemporary Theory and Practice. New York: Oxford University Press; 2008
- Matshes E, Burbridge B, Sher B, Mohamed A, Juurlink B. Human Osteology and Skeletal Radiology. Boca Raton: CRC Press; 2005
- Passalacqua NV, Rainwater CW (eds.). Skeletal Trauma Analysis: Case Studies in Context. New York: John Wiley and Sons, Ltd; 2015
- Scheuer L, Black S. Developmental Juvenile Osteology. San Diego: Academic Press; 2000
- Steadman DW (ed.). Hard Evidence: Case Studies in Forensic Anthropology. Upper Saddle River: Prentice Hall; 2009
- Wedel VL, Galloway A (eds.). Broken Bones: Anthropological Analysis of Blunt Force Trauma. Springfield: Charles C. Thomas; 2014
- White TD, Black MT, Folkens PA, Human Osteology. San Diego: Academic Press; 2011

Forensic Toxicology

- Drummer OH, Odell M. The Forensic Pharmacology of Drugs of Abuse. London UK: Arnold; 2001
- Karch SB. Karch's Pathology of Drug Abuse, CRC Press; 2015
- Mason JK, Purdue BN. The Pathology of Trauma, London: Arnold.
- Ellenhorn MJ et al. Ellenhorn's Medical Toxicology: Diagnosis and Treatment of Human Poisoning. Baltimore: Williams & Wilkins

Forensic Molecular Biology

- Butler JM. Fundamentals of Forensic DNA Typing. Elsevier; 2009
- Butler JM. Forensic DNA Typing. Elsevier; 2005
- Buckleton J. Forensic DNA Evidence Interpretation. CRC Press.
- Rudin N, Inman K. An Introduction to Forensic DNA Analysis. CRC Press; 2001

Forensic Entomology

- Amendt J, Campobasso CP, Goff ML, Grassberger M. Current Concepts in Forensic Entomology. Netherlands:Springer; 2010
- Byrd JH, Castner JL. Forensic Entomology: the Utility of Arthropods in Legal Investigations. CRC Press; 2009
- Gennard D. Forensic Entomology: an Introduction. Wiley-Blackwell; 2012
- Rivers DB, Dahlem GA. The Science of Forensic Entomology. Wiley-Blackwell; 2014
- Tomberlin JK, Benbow ME. Forensic Entomology: International Dimensions and Frontiers. CRC Press; 2015

Journals

American Journal of Forensic Medicine & Pathology
Journal of Forensic Sciences
Forensic Science International
Academic Forensic Pathology
Journal of Forensic and Legal Medicine
Medicine, Science and the Law
Forensic Science, Medicine, and Pathology
Forensic Science Abstracts

Meetings and Conferences

RCPA Pathology Update
RCPA Short course in Forensic Pathology (Hobart)
RCPA Introduction to the Mortuary and the Autopsy
ANZ Forensic Science Society
Australasian Coroners Conference
RCPA course on Autopsy and Forensic Histopathology
Forensic Interim Meeting
Forensic Radiology (VIFM)
American Academy of Forensic Science
NAME (The National Academy of Medical Examiners)
International Association of Forensic Science
Canadian Society of Forensic Science (CSFS)
TIAFT (The International Association of Forensic Toxicologists)

If you have ideas about additional resources, please inform RCPA (rcpa@rcpa.edu.au) so that these can be added to future editions of this handbook.

SECTION 2 – CURRICULUM

Research Standards

Standard
Fellows of the Faculty of Science will: **Demonstrate highly developed skills in research, management of time and resources and communication of outcomes and data, whilst independently developing theoretical concepts, acquiring new knowledge and testing hypotheses in the field of Forensic Science.**

Content	Outcomes	Indicator
R 1 – Research	**R 1 – Demonstrated ability in carrying out effective research** **1.1** Comment on recent advances and relevant literature in their field of study **1.2** Employ analytical and critical thinking to develop, refine or critique theoretical concepts, and to recognise problems **1.3** Develop research proposals and protocols towards testing current hypotheses/ investigating or validating contemporary problems/ acquiring new knowledge in the discipline **1.4** Apply statistical and epidemiological concepts and interpret epidemiological/ laboratory data **1.5** Critically evaluate own findings and the findings of others **1.6** Demonstrate an understanding of ethical/ professionalism issues relating to research including but not limited to consent, ethical treatment of humans and animals, confidentiality and privacy, attribution of credit (including authorship), intellectual property and copyright, malpractice and misconduct **1.7** Participate in effective and ethical peer review processes as researchers and peer reviewers	R 1 will be evidenced through At least 2 first author publications, published in the last ten years together with a written discussion that explains the background, interrelatedness and significance of the research. Candidates must detail their own contribution to the research. Individuals with a PhD, or a Masters (by Research) related to the area of expertise in Pathology conferred by a university recognised by the College, may be exempted from this component at the discretion of the Principal Examiner. AND • Answering questions in an oral examination to the standard approved by the principal examiners
R 2 – Management	**R 2 – Demonstrated ability in the management of research and research administration** **2.1** Prioritise outcomes, meet goals and work productively with key stakeholders using effective project management skills **2.2** Participate in processes for obtaining funding including applying for grants and other external funding **2.3** Use information systems and appropriate resources or technologies to record and communicate research findings **2.4** Determine the most cost effective methods to achieve a research goal **2.5** Demonstrate flexibility, adaptability, and innovation in management of research	All R 2 outcomes could be assessed through: • A report, to be submitted in the candidate's portfolio as detailed in Part II assessment policy AND • Answering questions in an oral examination to the standard approved by the principal examiner

Content	Outcomes	Indicator
R 3 – Communication	**R 3 – Demonstrated ability in research communication** **3.1** Clearly articulate ideas, construct cohesive arguments, and translate and convey technical concepts and information to a variety of stakeholders in a style appropriate to the context **3.2** Prepare reports and papers for peer review/ publication that comply with the conventions and guidelines for reporting biomedical research **3.3** Defend research methods and findings in peer review and/or oral examination **3.4** Achieve a significant number of articles in peer-reviewed publications **3.5** Support the development of research capacity of others in teaching, mentoring or demonstrating	• Document material presented at weekly laboratory meetings • Document the planning and progress of research towards a higher degree through Annual or 6 monthly report • Publications, presentations and poster abstracts • Document the contribution to research training programs or assisting other scientists/ registrars in conducting research AND • Answer questions in an oral examination to the standard approved by the principal examiner

Forensic Science Laboratory Standards – Part I

Standard
Fellows of the Faculty of Science will: **Demonstrate competence in the foundation knowledge required to understand the context (be it legal/judicial, ethical, operational, jurisdictional) within which forensic science operates.**

Content	Outcomes	Indicator
FSL 1 – The Domestic Framework **Overview of legal system** **Law of evidence and the role of the expert in court proceedings** **Continuity and Chain of custody** **Ethics and Human rights**	**1.1** Describe the structure and function of the Australian legal system including: 1.1.1 Criminal and civil law 1.1.2 The courts (High Court; Federal and State courts and hierarchies including Children's, Coroner's Courts and other forums which exist to resolve disputes) 1.1.3 Legal decision making 1.1.4 Legislation 1.1.5 Department of Public Prosecutions 1.1.6 Organisation of the legal profession 1.1.7 Police: scope, organisation and constitutional position 1.1.8 Provision of forensic services generally. **1.2** Understand the rules of evidence as these apply to expert witnesses, and their role generally in court. **1.3** Understand the principles of chain of custody, continuity, integrity and preservation of evidence as it applies to different forensic disciplines **1.4** Ethics: Compare ethics and the law; describe ethical issues in forensic science; describe ethical issues in expert evidence **1.5** Human rights: what are they	Outcomes will be evidenced by answering written examination questions to the satisfaction of the principal examiner, in addition to workplace-based assessment scaffolds as part of a portfolio of work.
FSL 2 – International issues in Forensic Science	**2.1** Crimes against humanity & gross abuse of human rights 2.1.1 Describe international criminal law, human rights law and international humanitarian law architecture **2.2** International criminal court and international criminal tribunals 2.2.1 Describe their structure and function 2.2.2 Describe types of evidence in international criminal prosecutions	
FSL 3 – Introduction to Crime and Death Scene Management and Evaluation	**3.1** Crime and Death Scene Management 3.1.1 Explain the management of crime and death scenes 3.1.2. Describe evidence collection, security, continuity, and preservation 3.1.3. Describe specimen transport and receipt	Outcomes will be evidenced by answering written examination and oral questions to the satisfaction of the principal examiner, in addition to workplace-based assessment scaffolds as part of a portfolio of work.

Standard
Fellows of the Faculty of Science will: **Demonstrate competence in applying the techniques, technologies and reporting of Forensic Science laboratories with a broad case-mix.**

Content	Outcomes	Indicator
FSL 4 – Introduction to the Forensic Sciences	**4.1 Forensic Toxicology** Describe the management of exhibits and the technologies and techniques routinely used in a forensic toxicology laboratory 4.1.1 Liaison and Exhibit Handling • Describe liaison activities and what is required to log in a case and ensure continuity of evidence and adequate activation for case analyses • Suggest strategies to investigate inadequate chain of custody and information requirements relevant to discipline • Discuss storage requirements of particular specimens and/or case types • Discuss transportation requirements particularly when material is collected remotely 4.1.2 Principles of Basic Laboratory Techniques • Buffers (function and preparation) • pH meters • Spectrophotometry • Calibration of instruments • Validation of Test Methods • Immunoassays for drugs of abuse and knowledge of the various types • High performance liquid chromatography (HPLC) • Gas Chromatography (GC) • Mass Spectrometry including electron impact (EI), chemical ionisation (CI) and high resolution, and understanding of the various types of MS instrumentation	Outcomes will be evidenced by answering written examination and oral questions to the satisfaction of the principal examiner, in addition to workplace-based assessment scaffolds as part of a portfolio of work.
	4.2 Forensic Molecular Biology 4.2.1 Knowledge of relevant Acts and Legislation legalities of consent and sample collection/analysis, for example: • Privacy Act • Relevant Legislation in the candidates jurisdiction 4.2.2 Knowledge of basic principles of molecular biology • Nucleic acid structure and biology • Nucleic acid fragment separation methods (slab gels and capillary electrophoresis) • Nucleic acid quantitation techniques	

Content	Outcomes	Indicator
	• Mechanisms of DNA damage • Mitochondrial genome • Population Genetics • Principles of parentage testing • Principles of familial DNA screening • Principles of Polymerase Chain Reaction (PCR) • Short Tandem Repeat (STR) structure, function and analysis • Single Nucleotide Polymorphism (SNP) structure, function and analysis • DNA contamination reduction strategies	
	4.3 Mortuary Science 4.3.1 Knowledge of the basic principles of a Mortuary Science service • Principles of consent and authority for autopsy • Rationale for autopsy in different settings and circumstances • Aims of the autopsy • Principles of operation of the mortuary • Expected outcomes of autopsy • Basic process followed in autopsy	Outcomes will be evidenced by answering written examination and oral questions to the satisfaction of the principal examiner, in addition to workplace-based assessment scaffolds as part of a portfolio of work.
	4.4 Forensic Anthropology 4.4.1 Knowledge of the basic principles and practice of Forensic Anthropology • Recovery of skeletal elements (surface, buried) • Law and ethics • Handling historical indigenous skeletal remains • Assessments of species, ancestry, sex, age, physical characteristics and time since death • Reconstruction of the events around death • The international context	
	4.5 Forensic Entomology 4.5.1 Knowledge of the basic principles and practice of Forensic entomology • Scope of the science • Specimen collection • Basic techniques • Contribution to assessment of time since death	
	4.6 Forensic Pathology, Clinical Forensic Medicine and Forensic Odontology 4.6.1 Knowledge of the basic principles and practice of forensic pathology, clinical forensic medicine and forensic odontology • Scopes of practice • Nature of their contributions to law and justice • How these contributions are made • Strengths and limitations	Outcomes will be evidenced by answering written examination and oral questions to the satisfaction of the principal examiner

Content	Outcomes	Indicator
	4.7 Forensic Science working with Forensic Medicine 4.7.1 Forensic Science and Medicine Strengths: 4.7.1.1 Philosophy of Science 4.7.1.2 Science and Medicine compared 4.7.1.3 Background, structure and operations of forensic pathology, clinical forensic medicine and forensic odontology in Australia 4.7.2 Contextual Bias 4.7.2.1 Understand what is mean by contextual bias 4.7.2.2 Describe how to take measures to deal with/mitigate the effects of/avoid contextual bias in case work 4.7.3 Forensic Science and Medicine Weaknesses 4.7.3.1 The Innocence Project 4.7.3.2 Wrong Convictions generally 4.7.3.3 How to avoid wrong convictions	Outcomes will be evidenced by answering written examination and oral questions to the satisfaction of the principal examiner, in addition to workplace-based assessment scaffolds as part of a portfolio of work.
	4.8 Mass Fatality and Disaster Victim Identification (DVI) 4.8.1 Define Mass Fatality / DVI event 4.8.2 Describe the five stages of DVI 4.8.3 Describe the Interpol DVI guidelines 4.8.4 Understand identification issues 4.8.4.1 Describe the role of molecular biology in identification 4.8.4.2 Understand the role of odontology in identification 4.8.4.3 Describe the role of anthropology in identification 4.8.5 Understand issues of scene management 4.8.6 Understand importance of preservation of remains and describe means of preservation 4.8.7 Understand issues of retrieval and labelling of remains 4.8.8 Understand issues of sample collection, security, continuity and preservation 4.8.9 Describe issues of specimen transport and receipt 4.8.10 Understand occupational health & safety issues 4.8.11 Understand quality control issues	Outcomes will be evidenced by answering written examination and oral questions to the satisfaction of the principal examiner, in addition to workplace-based assessment scaffolds as part of a portfolio of work.
	4.9 Occupational Health and Safety 4.9.1 Understand health and safety issues associated with handling of biological samples 4.9.2 Describe hazards (other than biological) that may be encountered 4.9.3 Describe procedures required following exposure to nuclear, biological, chemical and other hazards	Outcomes will be evidenced by answering written examination questions to the satisfaction of the principal examiner, in addition to workplace-based assessment scaffolds as part of a portfolio of work.

Forensic Science Laboratory Standards – Part II: Forensic Toxicology

For a Forensic Toxicology trainee, the learning outcomes desirable to be achieved early in training (prior to Part 1 examination) are denoted as [E] and the learning outcomes to be achieved at a more advanced level of training (following success in the Part 1 examination) are denoted as [A]. Competence in outcomes achieved early in training should be maintained throughout.

Standard
Fellows of the Faculty of Science will: **Demonstrate competence in applying their expertise in techniques, technologies and processes to lead the activities of a Forensic Toxicology laboratory.**

Content	Outcomes	Indicator
FT 1 – Analytical techniques	**1.1** Describe the principles of immunoassays and outline applications in forensic toxicology: • Outline the advantages and disadvantages of immunoassays [E] • Describe the limitations of immunoassays conducted both in the field and in the laboratory[E] **1.2** Describe the principles of the various forms of chromatography and outline applications in forensic toxicology for HPLC and GC. • Outline the theory associated with these techniques including relevant applications [E] • Describe the advantages and limitations of these techniques for forensic toxicology [E] • Describe the development of a GC technique used in your field of expertise and its application to the analysis of forensically relevant drugs. Evaluate the science or technology underpinning the technique and detail the contributions of key authors who contributed to the development of this technique [A] **1.3** Describe the principles of mass spectrometry, including EI and CI-MS, ion-trap MS, tandem MS, and high resolution MS and outline applications in forensic toxicology • Outline the theory associated with these techniques including applications [E] • Describe the advantages and limitations of these techniques for forensic toxicology [E] **1.4** Describe the principles of Initial Tests and outline their applications in analytical toxicology • Describe a systematic approach to drug screening in a forensic laboratory [A] • Outline the parameters which can determine the type of tests undertaken [A]	Outcomes will be principally evidenced by completing workplace-based assessments and Faculty of Science Reports that demonstrate competency in applying and evaluating forensic toxicology laboratory techniques, but may be supplemented by answering written examination and oral questions to the satisfaction of the principal examiner appointed by the College

	1.5 Describe the principles of Confirmation Tests and outline their applications in analytical toxicology • Outline the standards associated with confirmatory analysis [A] • Give example of different confirmatory tests [A] **1.6** Describe the principles of cut-offs and outline their applications in analytical Toxicology • Outline the advantages and disadvantages of using cut-offs in clinical and forensic toxicology laboratories [A]	
FT 2 – Specimens	**2.1** Selection of specimens in forensic toxicology and their relative advantages and disadvantages • Outline the specimens that can be collected for drug facilitated crime cases and drug impaired drivers [E] • Describe the applicability of different specimen types for medico-legal case investigations of each of these specimens, e.g. blood, urine, oral fluid, hair, etc. [E] **2.2** Selection of specimens in post-mortem toxicology, and their relative advantages and disadvantages • Describe the applicability of forensic specimens collected at post-mortem and their relative uses; [E] • Outline the issues associated with post-mortem sampling including how specimens are collected [E] • Describe the theory and process of redistribution and the issues surrounding drug concentrations determined at post-mortem [A] • Outline specimen integrity including what happens in advanced putrefaction [A] **2.3** Selection of physical exhibits in clinical and forensic toxicology, and their relative advantages and disadvantages • Describe the applicability of forensic exhibits and their usefulness in medico-legal case investigations [A]	Outcomes will be evidenced by answering written examination and oral questions to the satisfaction of the principal examiner, in addition to workplace-based assessments as part of a portfolio of work and Faculty of Science Reports.
FT 3 – Alcohol	**3.1** Outline the analysis of alcohol and other similar volatile substances and their relevance in clinical and forensic toxicology • Describe the techniques used for the determination of alcohol in clinical and forensic laboratories [E] • Outline the differences in specimens used for alcohol analysis [E] • Describe what parameters may affect the elimination of alcohol [E] • Outline the issues associated with measuring alcohol post-mortem [E] • Outline the techniques associated with alcohol back calculations, give examples [E]	Outcomes will be evidenced by answering written examination and oral questions to the satisfaction of the principal examiner, in addition to workplace-based assessments as part of a portfolio of work and Faculty of Science Reports.

FT 4 – Drugs of Abuse	**4.1** Outline the different classes of drugs of abuse and their relevance in forensic toxicology • Describe new and emerging drugs of abuse [A] • Describe the pharmacological properties of the different classes of drugs of abuse [A] • Outline the various international standards associated with drugs of abuse testing e.g. AS4308, AS4760, SAMSHA guidelines, etc. [A]	Outcomes will be evidenced by answering written examination and voce questions to the satisfaction of the principal examiner, in addition to Faculty of Science Reports.
FT 5 – Pharmacology of drugs	**5.1** Outline the pharmacology of the main classes of forensically relevant drugs with a focus on: • drugs of abuse such as amphetamine-type stimulants, GHB, Ketamine and other hallucinogens, opiates and opioids, cannabinoids, cocaine and benzodiazepines; [E] • other forensically relevant drug classes such as antidepressants, antipsychotics, antiepileptics, other stimulants and other depressants [E]	Outcomes will be evidenced by answering written examination and oral questions to the satisfaction of the principal examiner, in addition to workplace-based assessments as part of a portfolio of work.
FT 6 – Interpretation of drug results	**6.1** Outline the parameters which can affect the interpretation of forensic toxicology results • Outline the difference in interpretation between clinical and forensic toxicology [A] • Outline relevant pharmacokinetic parameters and how they influence assessment of dose, timing of dosing and drug clearance. [A] • Outline the general processes of drug metabolism and how this might influence drug action; [A] • Outline key adverse drug combinations, with examples; [A] • Provide a review of post-mortem artefacts that can influence results, such as stability, distribution and redistribution, contamination of fluids and decomposition [A]	Outcomes will be evidenced by answering written examination and oral questions to the satisfaction of the principal examiner, in addition to workplace-based assessments as part of a portfolio of work and Faculty of Science Reports.
FT 7 – Presentation of Expert evidence	**7.1** Demonstrate appropriate skills in expert evidence delivery in court, including to a lay jury and legal personnel, with consideration of possible standard questions addressing the use of toxicological evidence [A]	Outcomes will be evidenced by answering written examination and oral questions to the satisfaction of the principal examiner, in addition to workplace-based assessments as part of a portfolio of work.

Forensic Science Laboratory Standards – Part II: Forensic Molecular Biology

For a Forensic Molecular Biology trainee, the learning outcomes desirable to be achieved early in training (prior to Part 1 examination) are denoted as [E] and the learning outcomes to be achieved at a more advanced level of training (following success in the Part 1 examination) are denoted as [A]. Competence in outcomes achieved early in training should be maintained throughout.

Standard
Fellows of the Faculty of Science will: **Demonstrate competence in applying their expertise in techniques, technologies and processes to lead the activities of a Forensic Molecular Biology laboratory.**

Content	Outcomes	Indicator
FMB 1 – Laboratory practice theory	**1.1** Knowledge of basic principles of Molecular Biology, for example: • Critical instrumentation for STR profiling (e.g. Genetic Analysers 310, 3100, 3130 or 3500) [E] • DNA detection methods [E] • DNA extraction technologies [E] • DNA sequencing (Sanger) and analysis [E] • DNA sequencing (massive parallel) and analysis [E] • Knowledge of earlier DNA profiling technologies (e.g. HLA DQα, D1S80, Polymarkers, RFLP) [E] • Nucleic acid structure and biology [E] • Nucleic acid fragment separation methods (slab gels and capillary electrophoresis) [E] • Nucleic acid quantitation techniques [E] • Mechanisms of DNA damage [E] • Mitochondrial genome [E] • Population Genetics [A] • Principles of parentage testing [A] • Principles of familial DNA screening [A] • Principles of Polymerase Chain Reaction (PCR) [A] • Short Tandem Repeat (STR) structure, function and analysis [A] • Single Nucleotide Polymorphism (SNP) structure, function and analysis [A] • Statistical analysis [A] • Screening and confirmatory tests for blood, semen, saliva [A] • Use of automation and liquid handling robots [A]	Outcomes will be evidenced by answering written examination questions to the satisfaction of the principal examiner, in addition to workplace-based assessments as part of a portfolio of work and Faculty of Science Reports.
FMB 2 – Laboratory Practice Operations	**2.1** Knowledge of basic principles of casework involving Molecular Biology, for example: • Accreditation [E] • Administrative review [E] • DNA analysis [E] • Data reporting [E] • Data storage [E] • Expert evidence [E]	Outcomes will be evidenced by answering written examination and oral questions to the satisfaction of the principal examiner, in addition to workplace-based assessments as part of a portfolio of work and Faculty of Science Reports.

Content	Outcomes	Indicator
	• Expert systems [E] • Expert opinion [E] • Knowledge of forensic DNA profiling kits [E] • Quality assurance (QA) [A] • Quality control (QC) [A] • Report writing [A] • Sample handling, receipt, storage, and transportation [A] • Technical review [A] • Validation and verification studies [A]	
FMB 3 – Laboratory techniques: DNA recovery methods	**3.1** Explain the principles, performance and limitations of DNA recovery methods, including: • Control samples/reactions [E] • DNA contamination reduction strategies [E] • DNA extraction methodology based on sample types (such as FTA cards, blood, tissue, or bone) [A] • DNA quantification (real time PCR or gel electrophoresis) [A] • Laboratory setup/workflow [A]	Outcomes will be principally evidenced by completing workplace-based assessments and Faculty of Science Reports that demonstrate competency in applying and evaluating molecular biology laboratory techniques, but may be supplemented by answering written examination and oral questions to the satisfaction of the principal examiner appointed by the College
FMB 4A – Laboratory techniques: autosomal nDNA typing and analysis	**4A.1** Explain the principles, performance and limitations of autosomal nDNA typing methods using STR analysis, including: • Control samples/reactions [E] • DNA STR typing using in-house or commercial kits [E] • DNA fragments separation (capillary electrophoresis) [E] • DNA profiling using appropriate software (such as GeneMapper ID-X) [A] • Laboratory setup/workflow [A] • Sources of DNA relevant to criminal investigations [A] **4A.2** Evaluate autosomal nDNA typing data, including: • Artefacts, stutter, microvariants, null alleles [E] • Calculating likelihood ratio for a direct or kinship comparison [E] • Critical issues: degraded DNA, inhibition, mixtures, low-template testing [E] • Direct matching [E] • Evaluation of mixed DNA profiles (deconvolution, conditioning, etc.) [A] • Forensic DNA databases [A] • Kinship comparison [A] • Familial database searching [A] • Population databases (allelic frequencies; theta values) [A] • Principles of statistical analysis relevant to forensic DNA profiling [A] • Use of forensic DNA profiling in criminal investigations [A]	Outcomes will be principally evidenced by completing workplace-based assessments and Faculty of Science Reports that demonstrate competency in applying and evaluating molecular biology laboratory techniques, but may be supplemented by answering written examination and oral questions to the satisfaction of the principal examiner appointed by the College

Content	Outcomes	Indicator
OR **FMB 4B – Laboratory techniques: Y-STR nDNA typing and analysis**	**4B.1** Explain the principles, performance and limitations of Y-STR nDNA typing methods, including: • Control samples/reactions [E] • DNA Y-STR typing using in-house or commercial kits [E] • DNA fragments separation (capillary electrophoresis) [E] • DNA profiling using appropriate software [A] • Laboratory setup/workflow [A] • Sources of DNA relevant to criminal investigations [A] **4B.2** Evaluate Y-STR typing data, including: • Artefacts, stutter, micro-variants, null alleles [E] • Calculating frequency of the Y-STR profile [A] • Critical issues: degraded DNA, inhibition, mixtures, low-template testing [E] • Direct matching [E] • Forensic DNA databases [A] • Haplotypes [A] • Haplogroups [A] • Population databases (haplotype frequencies) [A] • Principles of statistical analysis relevant to forensic DNA profiling [A] • Use of forensic DNA profiling in criminal investigations [A]	Outcomes will be principally evidenced by completing workplace-based assessments and Faculty of Science Reports that demonstrate competency in applying and evaluating molecular biology laboratory techniques, but may be supplemented by answering written examination and oral questions to the satisfaction of the principal examiner appointed by the College
OR **FMB 4C – Laboratory techniques: mtDNA typing and analysis**	**4C.1** Explain the principles, performance and limitations of mtDNA typing methods, including: • Control samples/reactions [E] • Contamination minimisation strategies [E] • mtDNA amplification (PCR based) [E] • DNA sequencing (sanger or massive parallel) or DNA SNP analysis [A] • Laboratory setup/workflow [A] • mtDNA profiling via comparison to Cambridge Reference Sequence [A] **4C.2** Evaluate mtDNA typing data, including: • Artefacts (e.g. dye blobs) [E] • Calculating frequency of the mtDNA profile [A] • Critical issues: degraded DNA, inhibition, mixtures [E] • Haplotypes [A] • Haplogroups [A] • Population databases (haplotype frequencies) [A] • Principles of statistical analysis relevant to forensic DNA profiling [A] • Use of forensic DNA profiling in criminal investigations [A]	Outcomes will be principally evidenced by completing workplace-based assessments and Faculty of Science Reports that demonstrate competency in applying and evaluating molecular biology laboratory techniques, but may be supplemented by answering written examination and oral questions to the satisfaction of the principal examiner appointed by the College

Content	Outcomes	Indicator
PLUS **FMB 5 – Case review: cases/ legal decisions**	**5.1** Case review of key cases that have influenced Forensic Molecular Biology (e.g. Chamberlain, Jama), including: • Issues raised relevant to the field [E] • Recommendations arising from the case [A] • Management / Implementation of recommendations in the applicant's jurisdiction [A] • National and International landscape [A] **5.2** Case review of key legal decisions that have influenced Forensic Molecular Biology, including: • Issues raised relevant to the field [A] • Recommendations arising from the legal ruling [A] • Management / Implementation of recommendations in the applicant's jurisdiction [A] • National and International landscape [A] **5.3** Demonstrate appropriate skills in expert evidence delivery in court, including to a lay jury and legal personnel, with consideration of possible standard questions addressing the use of molecular biological evidence [A]	Outcomes will be evidenced by answering written examination and oral questions to the satisfaction of the principal examiner appointed by the College and by case-based discussion.
AND **FMB 6 – DNA profiling in non-human forensic applications**	**6.1** The use of DNA profiling techniques (as described in 4A-4C) in non-human forensic applications (such as microbial forensics), including in addition: • Database requirements for statistical reporting [A] • Use of non-human DNA profiling in criminal investigations [A]	Outcomes will be evidenced by answering written examination and oral questions to the satisfaction of the principal examiner appointed by the College and by case-based discussion.

Content	Outcomes	Indicator

FMB 7 – Foundations of laboratory management	**7.1** Describe the elements and complexities of managing a forensic molecular biology laboratory mortuary, including:
	• Accreditation (such ISO 17025) [E]
	• Case coordination and tracking [E]
	• Communication with other agencies [E]
	• Documentation & Records management [E]
	• Environmental monitoring for DNA levels [E]
	• Ethics specific to forensic laboratories [E]
	• Facilities and equipment management (including equipment maintenance) [E]
	• Induction and training of staff [E]
	• Management of various sample types [E]
	• Management of various case types [A]
	• Management of staff & their responsibilities [A]
	• Occupational Health and safety issues including: [A]
	  • Handling of samples from high risk and infections cases (including prion diseases)
	  • Hazards
	  • Injuries
	  • Manual handling
	  • Personal Protective Equipment
	  • Recording incidents/near misses
	  • Use of electric equipment (such as saws)
	• Research & development [A]
	• Quality systems [A]
	• Sample admission [A]
	• Sample storage [A]
	• Stakeholder management [A]
	• Staff competency [A]
		Outcomes will be evidenced by answering written examination and oral questions to the satisfaction of the principal examiner, in addition to workplace-based assessments as part of a portfolio of work and Faculty of Science Reports.

FMB 8 – Disaster Victim Identification (DVI)	**8.1** Describe the elements and complexities of managing a forensic molecular biology laboratory during a DVI effort, including: • Role and responsibilities in each of the five stages of DVI [E] • Using the Interpol DVI guidelines [E] • Managing a DNA laboratory in a disaster setting [E] • Sample collection (AM and PM) [E] • Sample selection for DNA analysis (triage) [E] • Setting up the laboratory to process samples from a small, medium or large disaster [E] • Management of biological hazards [E] • Occupational Health and Safety issues particular to disasters [E] • Staff wellbeing [E] • Primary identification techniques [E] • Kinship and direct matching capability [A] • Report writing [A] • Reconciliation/ID boards [A] • Resource management [A] • Quality management [A]	Outcomes will be evidenced by answering written examination and oral questions to the satisfaction of the principal examiner, in addition to workplace-based assessments as part of a portfolio of work and Faculty of Science Reports.

Forensic Science Laboratory Standards – Part II: Mortuary Science

For a Mortuary Science trainee, the learning outcomes desirable to be achieved early in training (prior to Part 1 examination) are denoted as [E] and the learning outcomes to be achieved at a more advanced level of training (following success in the Part 1 examination) are denoted as [A]. Competence in outcomes achieved early in training should be maintained throughout.

Standard
Fellows of the Faculty of Science will: **Demonstrate competence in applying their expertise in techniques, technologies and processes to lead the activities of a Forensic Mortuary Science Service**

Content	Outcomes	Indicator
MS1 – Mortuary practice theory	**1.1** Knowledge of relevant law relating to • consent and authority for autopsy and related matters [E] • death certification [E] • organ and tissue donation and transplantation [E] • diagnosis of death [E] • retention of tissue for diagnosis or research [A] • anatomy schools [A]	Outcomes will be evidenced by answering written examination questions to the satisfaction of the principal examiner, in addition to Faculty of Science Reports.
MS 2 – Principles of mortuary practice	**2.1** Knowledge of basic principles of scientific mortuary practice including • The theoretical mortuary and pathology science with respect to types of cases, different manners of death, reasons for examination, expected findings and unexpected findings of significance in forensic mortuary setting [E] • The full range of techniques currently used in forensic mortuaries including photography, evisceration, radiology, neuropathology, odontology, toxicological samples and other special investigations [E] • Principles of evidence handling and specimen management [E] • Interaction/communication with other disciplines (e.g. anthropology, odontology, toxicology, biology) and other agencies [E]	Outcomes will be evidenced by answering written examination and oral questions to the satisfaction of the principal examiner, in addition to workplace-based assessments as part of a portfolio of work and Faculty of Science Reports.
MS 3 – Foundations of Mortuary Management	**3.1** Describe the elements and complexities of managing a forensic mortuary including: • Occupational Health and safety issues [E] including: o Infection Control o Handling of high risk and infections cases (including prion diseases) o Manual handling o Personal Protective Equipment o Injuries o Hazards including asbestos & other contaminants • Body admission [E] • Identification [E] • Handling of clothing and personal effects [E] • Processing of exhibits [E] • Facilities and equipment management [A] • Care and maintenance of equipment [A] • Theatre cleaning [E] • Collection of DNA evidence [A]	Outcomes will be evidenced by answering written examination and oral questions to the satisfaction of the principal examiner appointed by the College, in addition to workplace-based assessments as part of a portfolio of work and Faculty of Science Reports.

Content	Outcomes	Indicator
	• Care of bodies while in storage [A] • Documentation & Records management [A] • Radiology [A] • Attending scene of death [A] • Management of suspicious cases (e.g.: those requiring police attendance) [A] • Management of decomposed / fragmented / partially skeletonised / skeletonised cases [A] • Body transport and conveyancing [A] • Body release [E] • Organ retention and release [A] • Stakeholder management [A] • Management of staff and their responsibilities [A] • Induction and training of staff [A] • Ethics specific to forensic mortuaries [A] • Quality systems [A] • Requirements for odontological assessment of bodies [A] • Case coordination and tracking [A]	
MS 4 – Post Mortem techniques	4.1 Demonstrate knowledge of theory and proficiency of techniques • Adult post-mortem examination [E] • Infant post-mortem examination [A] • Fetal post-mortem examination (including placental assessment) [A] • Specimen collection [E] o Toxicology o Microbiology o DNA o Other • Photography [E] • Radiology (optional) [A] • Special techniques [A] o In situ neck dissection o Spinal cord examination o Exposure of joints o Examination of bone marrow o Removal of eyes o Exposure of middle ear o Soft tissue dissection e.g. DVT detection • Restoration [E]	Outcomes will be principally evidenced by completing workplace-based assessments and Faculty of Science Reports that demonstrate competency in applying and evaluating mortuary science laboratory techniques, but may be supplemented by answering written examination and oral questions to the satisfaction of the principal examiner appointed by the College
MS 5 – Disaster Victim / Multiple body management	5.1 Describe the management of a forensic mortuary in a disaster including: • Role and responsibilities in each of the five stages of DVI [E] • Using the Interpol DVI guidelines [E] • Setting up temporary mortuary for a small, medium and large disaster [A] • Identification techniques [E] • Quality management [E] • Occupational Health and Safety issues particular to disasters [E] • Managing a mortuary in a disaster in a third world country [A] • ICRC management of dead bodies after a disaster [E] • Management of Chemical, Biological and Radiation hazards [A]	Outcomes will be evidenced by answering written examination and oral questions to the satisfaction of the principal examiner, in addition to workplace-based assessments as part of a portfolio of work and Faculty of Science Reports.

Forensic Science Laboratory Standards – Part II: Forensic Anthropology

For a Forensic Anthropology trainee, the learning outcomes desirable to be achieved early in training (prior to Part 1 examination) are denoted as [E] and the learning outcomes to be achieved at a more advanced level of training (following success in the Part 1 examination) are denoted as [A]. Competence in outcomes achieved early in training should be maintained throughout.

Standard
Fellows of the Faculty of Science will: **Demonstrate competence in applying their expertise in techniques, technologies and processes to lead the activities of a Forensic Anthropology service**

Content	Outcomes	Indicator
FA 1 – Forensic Anthropology practice theory	**1.1** Knowledge of relevant Acts and Legislation and related matters including: • State Coroner's Act [E] • State Heritage Act [E] • Anatomy Act (schools of anatomy) [E] • Ethics specific to forensic anthropology practice [E] • Ethics specific to forensic mortuaries [E]	Outcomes will be evidenced by answering written examination and oral questions to the satisfaction of the principal examiner, in addition to Faculty of Science Reports.
FA 2 – Foundation knowledge and skills of a Forensic Anthropologist	**2.1** Demonstrate the foundation knowledge and basic principles of physical and forensic anthropology including: • Competence in skeletal anatomy; human v non-human; human dentition [E] • Production of basic biological profile of human skeletal remains; personal age, sex, ancestry [E] • Understanding and production of basic biostatistics [E] • Understanding of the principles of human identification to Coronial standards [E] • Understanding of occupational health and safety issues relating to skeletal remains [E]	Outcomes will be evidenced by answering written examination and oral questions to the satisfaction of the principal examiner in addition to workplace-based assessments as part of a portfolio of work and Faculty of Science Reports.
FA 3 – Specialised knowledge and skills of a Forensic Anthropologist	3.1 Demonstrate knowledge of theory and proficiency of techniques • Advanced skeletal anatomy [A] • Bone biology (macro and micro) [E] • Basic biomechanics of bone [E] • Interpret and report statistical findings [E] • Understanding of bone biochemistry [E] • Understanding of molecular level bone biology (DNA) [E] • Understanding of basic decomposition processes [E] • Understanding of taphonomic changes in skeletons [E] • Interpretation of CT scans and radiological images of skeletons [A] • Recognition and interpretation of common skeletal pathologies [A] • Recognition and interpretation of common skeletal traumas [A] • Understanding of Interpol DVI standards [A]	Outcomes will be evidenced by answering written examination and oral questions to the satisfaction of the principal examiner appointed by the College and completing workplace-based assessments as part of a portfolio of work and Faculty of Science Reports.

Content	Outcomes	Indicator
	• Examining and recording of differentially preserved (i.e. incinerated and disrupted) human remains [A] • Examining of human remains at mass fatality incidents [A] • Examining of human remains in mass burial situations [A] • Understanding of associated forensic disciplines including pathology, odontology and biology and their interface with forensic anthropology [A]	
FA 4 – Demonstrate proficiency in practical skills required for anthropological assessment	• Preparation and preservation of skeletal remains [E] • Metrical analysis (measurement) of cranial and post-cranial skeletal remains [E] • Photography of skeletons [E] • Collection of bone samples for DNA and biochemical analysis [E] • Collection of bone sections for histomorphological analysis [E]	Outcomes will be principally evidenced by completing workplace-based assessments and Faculty of Science Reports that demonstrate competency in applying and evaluating forensic anthropology laboratory techniques, but may be supplemented by answering written examination and oral questions to the satisfaction of the principal examiner appointed by the College
FA 5 – Demonstrate proficiency in writing reports which accurately convey opinions and conclusions with reference to the evidence base and degrees of confidence	• Demonstrate proficiency for the different case types and different conclusions and opinions made by forensic anthropologists [A] • Demonstrate appropriate skills in expert evidence delivery in court, including to a lay jury and legal personnel, with consideration of possible standard questions addressing the use of anthropological evidence [A]	Outcomes will be evidenced by answering written examination and oral questions to the satisfaction of the principal examiner appointed by the College, in addition to workplace-based assessments as part of a portfolio of work and Faculty of Science Reports.

Forensic Science laboratory standards – Part II: Forensic Entomology

For a Forensic Entomology trainee, the learning outcomes desirable to be achieved early in training (prior to Part 1 examination) are denoted as [E] and the learning outcomes to be achieved at a more advanced level of training (following success in the Part 1 examination) are denoted as [A]. Competence in outcomes achieved early in training should be maintained throughout.

Standard
Fellows of the Faculty of Science will: **Demonstrate competence in applying their expertise in techniques, technologies and processes to lead the activities of a Forensic Entomology service**

Content	Outcomes	Indicator
FE 1 – Forensic Entomology practice theory	**1.1** Knowledge of relevant Acts and Legislation including: [E] • State Coroner's Act • Crimes Act • Anatomy Act **1.2** Ethics and professional practice framework • Ethics specific to forensic entomology practice [E] • Ethics specific to forensic mortuaries [E] • Structure of Australian courts and policing organisations [E]	Outcomes will be evidenced by answering written examination questions to the satisfaction of the principal examiner appointed by the College, in addition to Faculty of Science reports as part of a portfolio of work.
FE 2 – Foundation knowledge and skills of a Forensic Entomologist	**2.1** Demonstrate the foundation knowledge and basic principles of forensic entomology including: • General scope of forensic entomology and its three branches (stored product, urban, medicocriminal), with the emphasis on medicocriminal [E] • Introductory and intermediate insect anatomy, physiology and ecology [E] • Taxonomy and systematics and identification of invertebrate animals [E] • Introductory and intermediate biology of flies and beetles [E] • Ecology and decomposition of carrion [E] • Basic biostatistics and experimental design [E] • Fundamental meteorological processes [E] • Evidence collection techniques [E] • Basic and intermediate interpretation of forensic entomology evidence [E] • Basic understanding of the different branches of forensic medicine (pathology and clinical), and entomology casework that can be generated by both. [E] • Basic understanding of other forensic and scientific disciplines [E] • Occupational health and safety issues relating to human remains [E]	Outcomes will be evidenced by answering written examination and oral questions to the satisfaction of the principal examiner appointed by the college and chief examiner, in addition to workplace-based assessments as part of a portfolio of work.
FE 3 – Specialised knowledge and skills of a Forensic Entomologist	**3.1** Demonstrate knowledge of theory and proficiency of techniques • Advanced insect anatomy, especially as relevant to the identification of adult and immature flies, beetles found in carrion [A] • Morphological identification of terrestrial and aquatic invertebrates to the taxonomic level of class, order or family (as appropriate) [A]	Outcomes will be evidenced by answering written examination and oral questions to the satisfaction of the principal examiner appointed by the College and completing workplace-based assessments and Faculty of Science reports as part of a portfolio of work.

Content	Outcomes	Indicator
	• Morphological identification of adult and immature carrion insects to the taxonomic level of species, or at least genus or family, as appropriate, with an emphasis on flies [E] • Distributions and other natural history aspects of carrion-breeding insect species [E] • Reproductive strategies of carrion-breeding fly species [E] • Developmental physiology of carrion-breeding fly species [E] • Fundamentals of molecular genetic techniques used to identify insects or maggot gut contents [A] • Insect succession and chemical processes in carrion (terrestrial and aquatic) [A] • Interpretation of entomological evidence from CT scans [A] • Understanding of the potential effects of prescription and recreational drugs on fly development [A] • Recognised methods for estimation of minimum and maximum post-mortem interval[A] • Recognised methods for assessing season of death or relocation of remains [A] • Relevance of other invertebrate evidence associated with a case, e.g. parasites [A] • Retrospective death scene temperature estimation [A] • Familiarity with all relevant forensic and entomological scientific literature [A] • Interpretation and reporting of statistics [A] • Presentation of evidence in court, including to a lay jury and legal personnel [A] • Professional behaviour at scenes of crime, in interacting with law enforcement personnel, and with the media [A] • Understanding of associated forensic disciplines including pathology, anthropology, odontology, mortuary management and biology and their interface with forensic entomology [A]	
FE 4 – Demonstrate proficiency in practical skills required for entomological assessment	**4.1** Practical skills • Appropriate and rigorous collection and preservation of entomological evidence both at the death scene and mortuary [E] • Assessment of likelihood of contamination of entomological evidence [E] • Collection of appropriate meteorological data associated with death scenes [E] • Training of police and mortuary personnel in above procedures [E] • Insect identification [E] • Statistical analysis [A] • Preparation of appropriately qualified reports, including undertaking peer review [A] • Appropriate skills in expert evidence delivery in court, including consideration of possible standard questions addressing the use of entomological evidence [A]	Outcomes will be principally evidenced by completing workplace-based assessments and Faculty of Science reports that demonstrate competency in applying and evaluating forensic entomology laboratory techniques, but may be supplemented by answering written examination and oral questions to the satisfaction of the principal examiner appointed by the College.

Innovation, Development and Leadership standards

Standard
Fellows of the Faculty of Science will: • **Apply, implement and evaluate strategies that guarantee quality assurance, compliance, safety and efficient use of resources fundamental to the operation of a Forensic Science laboratory.** • **Demonstrate a commitment to the continual improvement and advancement of Forensic Science.** • **Apply the principles of Evidence Based Laboratory Practice (EBLP) to inform decisions, conclusions and opinions in Forensic Science.**

Content	Outcomes	Indicator
IDL1 – Evaluate laboratory policies and practices to meet quality management, compliance and safety standards	**1.1** Maintain and evaluate a quality assurance system under the appropriate ISO standards **1.2** Evaluate current practices to ensure compliance with NPAAC standards as appropriate or international equivalent **1.3** Synthesise quality assurance, quality control and safety, and Total Quality Management policies to meet NATA accreditation or international equivalent **1.4** Act with accountability to facilitate workflow, teams, decision making, and communication in management and planning of services and/or departments **1.5** Evaluate and improve workplace safety through proactive management practices, employing laboratory information systems and reporting mechanisms **1.6** Develop or review the processes of validation and verification of methodology used in the laboratory	Answer written examination and oral questions that demonstrate competence in these aspects of management required to lead a laboratory PLUS Complete the RCPA Laboratory Management modules (online), found on the RCPA Education website
IDL 2 – Demonstrate leadership and innovation in developing the practice of Forensic Science	**2.1** Maintain an evidence base to support advice provided for the benefit of Justice **2.2** Design, adapt and implement analytically valid and traceable routine tests, underpinned by reference materials and documented methods **2.3** Evaluate new methods as fit for use **2.4** Assess business opportunities for validity where appropriate **2.5** Provide strategic direction for the laboratory including management of change **2.6** Support and promote the education of colleagues, co-workers, students and the public through a variety of strategies e.g. formal/ informal teaching, developing educational material, and mentoring **2.7** Reflect on your engagement in Continuing Professional Development (CPD), and personal benefits **2.8** Define and model ethical practices in handling/ reporting patient information, interacting with others and seeking opinion, conflict of interest, financial probity, and managing errors **2.9** Identify your role in professional societies/ colleges and contribute to its activities	Answer oral questions and document activities in the portfolio that demonstrate leadership and innovation in these aspects of laboratory practice, supported by specific personal contributions review or develop educational materials for non-scientists Complete of the RCPA Ethics and Confidentiality modules (online), found on the RCPA Education website

Content	Outcomes	Indicator
IDL 3 – Demonstrate the ability to make informed decisions by accessing and integrating the most current, relevant, valid and reliable evidence available	**3.1** Identify knowledge gaps during practice and construct focussed, answerable questions to address these gaps **3.2** Use an appropriate search strategy to answer identified questions through existing evidence **3.3** Critically evaluate the relevance, authority and validity of all retrieved evidence including scientific information and innovations **3.4** Apply the appraised evidence appropriately to practice by informing decisions in the given context **3.5** Use reflective and consultative strategies to evaluate the EBLP process	Faculty of Science Reports submitted by the candidate should demonstrate principles of EBLP AND Answer written examination and oral questions

SECTION 3 – ASSESSMENT POLICY

This section explains the specific requirements and assessment policy for the Faculty of Science Forensic Science program. It should be read in conjunction with the ***RCPA Trainee Handbook Administrative Requirements***, found on the College website.

Part I – Requirements

Assessment in **Part I** is by:

1. Formal examinations
2. Portfolio of evidence indicating completion of a sufficient number and type of workplace-based activities and assessments
3. Satisfactory progress (Supervisor Reports)

See Assessment Matrices in **Appendices 4-8**.

The aim of the **Part I** assessments is to ensure that Trainees have spent time in the laboratory, acquired requisite knowledge and skills (including in other disciplines of forensic science) and participated in a community of practice, such that they can appropriately apply the laboratory/scientific and other professional elements of the Forensic Science disciplines.

1. Formal examinations

There will be a written examination, held in designated examination centres on dates specified by the College. This examination may require short answer and/or more extended responses to questions from the Forensic Science Laboratory Standards (Part I), Forensic Science Laboratory Innovation, Development and Leadership components of the curriculum. The research component is assessed separately at Part II level.

There will also be a practically oriented structured 'oral' examination, consisting of approximately 6 stations of 15-20 minutes duration. The focus of this examination will be evaluation of more specific practical aspects of Forensic Science Laboratory Standards (Part I) and Forensic Science Laboratory Innovation, Development and Leadership. The oral examination will normally pose similar questions for all candidates. Differences will arise as the outcomes of part II Laboratory Standards marked as early [E] for candidates in that discipline, may be examined. Responses will be marked against model answers. Where relevant all candidates will be given reading material to evaluate in the 5-10 minutes before entering the exam room.

2. Portfolio requirements

In addition to the various formal examinations, the trainee is expected to keep a portfolio of learning activities and other assessments. This portfolio includes records of workplace-based assessments including Directly Observed Practical Skills (DOPS), Short Case Reports, and Case-based Discussions (CbD). A logbook of learning activities must be kept.

Together, these provide evidence that the Trainee is developing technical skills and professional values, attitudes and behaviours that are not readily assessed by formal examinations. Trainees should start accumulating evidence for the portfolio as early as possible in training. It is the Trainee's responsibility to keep the logbook up to date and meet the additional portfolio requirements.

Appendix 1 details the Forensic Science Portfolio Requirements for both Part I and Part II.

Logbook

A sample page of what will become a logbook for recording workplace-based activities can be found in **Appendix 2**. **Every formal learning** activity should be recorded here. Only those

outlined below should be documented in more detail. Opportunities in the development and assessment of communication skills should also be recorded.

The supervisor should review and sign off completed portfolio forms and logbook on the annual, rotation and pre-exam Supervisor Report.

Short case reports

Trainees must complete a total of three or more short case reports (~1000 words). The trainee should discuss with their supervisor before selecting a case/topic for the report. The focus of the case report could be on a specific technical aspect covering any of the content areas specified in the Laboratory Standards (all Part I outcomes plus early [E] Part II outcomes in trainee's own discipline), including laboratory issues of diagnosis and testing. The discussion should include a focussed review of the relevant literature.

The Trainee should select a suitable assessor, who should be an RCPA Fellow but does not need to be the listed supervisor. The assessor could note this as a quality activity in their annual Continuing Professional Development Program (CPDP) submission. Short case reports will be evidenced by the assessor completing the assessment form, included as **Appendix 3.** Please include the completed assessment form and the report in the portfolio. Trainees are encouraged to present their completed case reports at scientific meetings of relevant colleges or societies.

Case-based discussions (CbD)

Trainees must complete a total of five or more Case-based discussions (CbD). CbDs will be evidenced by the supervisor completing the CbD form, included in **Appendix 2.**

Doing CbD assessments is excellent preparation for the **oral examinations** for trainees. CbD assessments provide feedback about the trainee's ability to interpret and relate laboratory results to opinions and conclusions, including about case circumstances; to plan appropriate investigations, and to provide advice on decisions related to investigations, including decisions with ethical and legal dimensions. The purpose of the CbD assessment is also to provide feedback to Trainees about their progress by highlighting strengths and areas for improvement, thereby encouraging their professional development.

The Trainee should initiate each CbD assessment. The Trainee should select a suitable assessor. The assessor need not always be the listed supervisor. The trainee can discuss and request the supervisor to delegate another assessor, preferably but not necessarily an RCPA Fellow. The assessor could note this as a quality activity in their annual Continuing Professional Development Program (CPDP) submission.

The Trainee should select and prepare two (2) recent cases with which s/he has been involved. The assessor should select one (1) of these for the Trainee to present and discuss. The Trainee should request a mutually convenient time to meet for about 30 minutes. The presentation/discussion should take about 15-20 minutes. A further 5-10 minutes should be allowed for the assessor to give immediate feedback and complete the CbD form. In addition to the formal CbD assessment, supervisors are encouraged to have an informal discussion of the second case prepared by the Trainee. Each CbD case discussion should cover one or more of the different aspects of practice indicated on the CbD form.

Directly Observed Practical Skills (DOPS)

Trainees will be required to demonstrate competence in their day-to-day work by performing Directly Observed Practical Skills. Once proficiency is achieved (to be assessed by at least one instance of observing the trainee and giving feedback) the Supervisor should complete the DOPS competence form included in **Appendix 2**. The supervisor should be guided by the outcomes in the Forensic Science laboratory standards sections for the scope and level of proficiency required. The signed DOPS competency forms should be included in the portfolio and noted in the Portfolio Summary spreadsheet. A minimum of 4 DOPS should be completed

prior to the Part I exams including at least one DOPS in a science other than the trainee's usual area of training, and a minimum of 8 DOPS in total should be completed by the Part II assessment. (This means that additional DOPS undertaken prior to the Part I assessment can be counted towards the Part II assessment if the Trainee wishes).
N.B. Trainees should only use the DOPS form for their specific sub-discipline

Other Evidence

Trainees should ensure that they are engaged in a variety of learning activities related to teaching, scholarship and leadership throughout training. These may include presentations (oral and posters), writing abstracts, staff presentations, conferences and teaching. These develop written and oral communication skills. Whilst each instance of these activities should be recorded in the logbook, documented evidence of a minimum of 5 from a variety of activity types per year should be made available upon request over the training period.

3. Supervisor Reports

The supervisor must review and sign off the completed portfolio forms and the logbook on the **Supervisor reports**. The supervisor must also rate the trainee according to their professional judgement in a range of competencies including in laboratory skills, research, innovation and leadership, and professional attitudes and behaviours. The behaviours to be rated and the rating scale with anchors are provided in the supervisor report.

Trainees must submit a Supervisor Report for each year of training (and period of rotation if applicable) to the RCPA Registrar. Trainees who are sitting the **Part I** oral examination must submit an additional pre-examination Supervisor Report. A cumulatively updated **Portfolio Summary Sheet**, documenting the portfolio of workplace based activities and assessment, must be appended to the pre-examination Supervisor Report and sent to the RCPA Registrar prior to the **Part I** oral examinations at a time determined by the RCPA. Trainees are responsible for submitting the pre-examination Supervisor Report by the due date. Failure to do so may jeopardise the accreditation of training time or finalisation of examination results. The Supervisor Report form can be found at: ***http://www.rcpa.edu.au/Trainees/Training-with-the-RCPA/Supervisor-Reports***

The portfolio summary sheet will be reviewed by the Registrar, Board of Education and Assessment or delegate and the Principal Examiner. The signatories and Trainee may be contacted to confirm evidence of satisfactory completion.

Note: The actual portfolio should not be sent unless requested for audit.

Summary of assessment requirements for Part I

Item	***Completion***	***Assessed by***	***Comments***
Written examination: short answer and/or more extended responses	At the end of three years of training	Marked by two (2) examiners with appropriate experience	Questions set by a panel of examiners
Oral examination: Multi-stationed set of structured assessment tasks/ interviews, with practically-oriented questions	After submission of pre-exam supervisor report and portfolio summary sheet	Two (2) examiners with appropriate experience per station	Questions set by a panel of examiners
Portfolio items (see Appendix I) to be signed off by supervisor or delegate e.g. DOPS, CbDs, Short Case Reports	To be completed before Part I oral examination	Portfolio summary spreadsheet is checked for completeness by RCPA. If incomplete, the candidate may be required to undertake further activities.	Portfolio items are to be reviewed by the supervisor when preparing the supervisor report. (The portfolio should not be sent to the College unless requested for audit)

Item	*Completion*	*Assessed by*	*Comments*
Supervisors' Reports with portfolio summary spreadsheet.	Annual (end of rotation if applicable) and Part I pre-exam reports	Reviewed by College registrar or delegate	Referral to Principal Examiner if necessary.

Part II – Requirements

Assessment in **Part II** is by:

1. Formal examinations
2. Faculty of Science Reports on Clinical Laboratory Practice
3. Portfolio of evidence indicating completion of a sufficient number and type of workplace-based activities and assessments
3. Satisfactory progress (Supervisor Reports)
4. Research work and reports

See Assessment Matrices in **Appendices 4-8**.

The aim of the **Part II** assessments is to ensure that Trainees have spent time in the clinical laboratory, acquired requisite knowledge and skills and participated in a community of practice, such that they can appropriately lead the activities of a forensic science laboratory in their area of expertise.

1. Formal examinations

There will be a structured 'oral' examination, consisting of approximately 3 stations of 20-30 minutes duration. The oral examination will normally pose similar questions for all candidates (other than in the Laboratory Standards). There will be two examiners per station and responses will be marked against pre-determined criteria. The focus of this examination will be evaluation of specific aspects of Forensic Science Laboratory Standards (Part II), Research Standards, and Forensic Science Laboratory Innovation, Development and Leadership.

The likelihood is that for most candidates there will be a written exam. The Trainee will be advised at least 12 months before hand of this requirement. The examination will be held in designated examination centres on dates specified by the College. The assessment tasks will reflect writing/ documentation in actual workplace practice. This examination requires higher level analytical and critical thinking skills (including skills in providing a professional opinion) in relation to questions assessing the Forensic Science Laboratory Standards (Part II), Forensic Science Laboratory Innovation, Development and Leadership components of the curriculum.

2. Faculty of Science reports on Clinical Laboratory Practice

The **Part II** assessment requires four (4) Reports of 3000-5000 words. These should be of a standard publishable in a journal such as *Pathology*.

In Forensic Science the Reports should relate to learning outcomes contained within the sections of the Part II: Forensic Laboratory Standards of the sub-discipline (Forensic Toxicology/Forensic Molecular Biology/Mortuary Science/Forensic Anthropology/Forensic Entomology) of the candidate. Of the four Reports at least two should address Advanced [A] learning outcomes. Not more than two Reports should be submitted per section.

The focus of the Report could range from a single patient case or case series to a large population depending on the discipline involved and the complexity of the situation under investigation. The Reports should demonstrate the candidate's approach to analysing the clinical/ pathological problem or issue in the case(s) or the population (including a relevant review of the literature) and follow up action/discussion based on principles of Evidence-based clinical Laboratory Practice.

It is also expected that some Reports will demonstrate the candidate's ability to be innovative, assure quality and consider management issues such as staff, instrument and reagent costs. Where applicable a Report should comment on issues such as, but not limited to, method selection, method validation, method development and trouble-shooting.

Based on the approach described earlier, following are some suggestions appropriate as Report aims:

- The introduction or development of a new test and comparisons with current best practice
- Transference of an existing test to a new context, sample type or processing protocol and comparing it to current practice
- A study that examines the sensitivity and specificity of a test, including positive and negative predictive values in a particular population
- A detailed analysis of cumulative laboratory data (including case series)
- A study comparing specialised populations

Please note that the above list is not exhaustive. Trainees may discuss with their supervisor and determine any other aim, and inform the College administration well before planning the work involved. The Principal Examiner will confirm the appropriateness of the aim.

The Reports will be independently marked by two examiners in the relevant discipline and candidates will be provided with feedback. **While these reports are considered to be Part II assessments, trainees should commence working on them as soon as possible, and submit them to the college for assessment as they are completed (it is preferable to avoid submitting all reports simultaneously). All Clinical Laboratory Practice Reports should be submitted by the month following the Part II Oral Examination.**

Any publications arising from the Reports may be used to meet the requirements of the Research Standards component of the curriculum. Candidates are encouraged to publish their Reports subsequent to examination.

Please refer to **Appendix 3** – Guidelines for Faculty of Science Reports (Part II)

3. Portfolio requirements

Directly Observed Practical Skills (DOPS)

A minimum of 8 DOPS in total (including the ones completed prior to Part I) should be completed by the Part II assessment. Some DOPS on advanced skills in a forensic science discipline are recommended to be completed in part II. See Appendix 5-9 for details of the **Directly Observed Practical Skills** requirement for each forensic science discipline.

N.B. Trainees should only use the DOPS form of their own discipline

Other Evidence

Trainees should ensure that they are engaged in a variety of learning activities related to teaching, scholarship and leadership throughout training. These may include presentations (oral and posters), writing abstracts, staff presentations, conferences and teaching. These develop written and oral communication skills. Whilst each instance of these activities should be recorded in the logbook, documented evidence of a minimum of 5 from a variety of activity types per year should be made available upon request over the training period.

4. Research work and reports

A PhD or a Masters by research as specified in the indicators for Research Standards is accepted as demonstrated ability to carry out effective research. Otherwise, the candidate needs to submit, in dissertation format, a collection of 6 original research articles published in journals of a standard approved by the principal examiners within the last ten years in addition to a discussion that explains the background, interrelatedness and significance of the research

as well as their own contribution to the research. The candidate should be the first or lead author in at least two of the six articles. A minimum of three of the six articles should be full research papers (not case studies and reviews). In each case the candidate must demonstrate a significant role in the published research.

In the case of a Masters by research, two original research articles as per the earlier specifications are required. Any Faculty of Science Reports completed and published during Part II training can be included as articles. Relevant documentation should be submitted at least one month prior to the Part II oral examination.

Research management would be assessed through a report to be submitted in the portfolio, which would detail the candidate's ability in managing a research project. The report should contain evidence and discussion (~1000 words) addressing the R2 and relevant R1 outcomes. Suggestions for evidence include research proposals and ethics submissions, grant applications made and/or periodic progress/ evaluation reports of successful grants, and end-of-year reports.

5. Supervisor Reports

Similar to Part I, Trainees who are sitting the **Part II** examination must submit a pre-examination Supervisor Report with the appended copy of the Portfolio Summary Sheet to the RCPA Registrar prior to the **Part II** examinations at a time determined by the RCPA. Failure to submit by the due date may jeopardise the accreditation of training time or finalisation of examination results. The Supervisor Report form can be found at:
http://www.rcpa.edu.au/Trainees/Training-with-the-RCPA/Supervisor-Reports

Summary of assessment requirements for Part II

Item	***Completion***	***Assessed by***	***Comments***
Written examination: assessment tasks will reflect writing/ documentation in actual workplace practice	In the fifth year of training	Marked by two (2) examiners with appropriate experience	Questions set by a panel of examiners This examination is likely to be applicable to most disciplines in Forensic Science
Oral examination: multi-station set of 25-30 min structured interviews	After submission of Faculty of Science Reports and portfolio	Two (2) examiners with appropriate experience per station	Questions set by a panel of examiners
Faculty of Science Reports: four (4) of a publishable standard to be certified as candidate's own work and signed by supervisor or delegate	To be completed by the month following the Part II oral examination	Assessed by a panel of examiners	Candidates may be required to revise & resubmit if not satisfactory.
Other portfolio items to be signed off by supervisor or delegate e.g. DOPS	To be completed before Part II oral examination	Portfolio summary spreadsheet is checked for completeness by RCPA. If incomplete, the candidate may be required to undertake further activities.	Portfolio items are to be reviewed by the supervisor when preparing the supervisor report. (The portfolio should not be sent to the College unless requested for audit)
Supervisors' Reports with portfolio summary spreadsheet.	Annual (end of rotation if applicable) and Part II pre-exam	Reviewed by College registrar or delegate	Referral to Principal Examiner if necessary.
Research work and reports	One month before Part II oral examination	Assessed by a panel of examiners	Referral to Principal Examiner if necessary.

Section 4 – Appendices

Appendix 1 - Portfolio Requirements for Forensic Science

The table below sets out guidelines to assist Faculty of Science trainees to compile the portfolio, the logbook and the portfolio summary spreadsheet.

Portfolio activities are carried out in the workplace and provide evidence that the trainee is developing technical skills and professional values, attitudes and behaviours that are not readily assessed by formal examinations. Trainees should start accumulating evidence for the portfolio as early as possible in training.

Appendices contain the forms and logbook pages for recording these workplace activities. Please file the (hard copy) forms in a **portfolio folder** with separate sections, numbered as in the table below.

A soft copy **portfolio summary** (Excel spreadsheet) should also be compiled so that trainees can keep track of what they have completed. It is the trainee's responsibility to keep both hard and soft copy records **up-to-date**.

The supervisor should review and sign off completed portfolio forms and logbook on the annual, rotation and pre-exam supervisor report.

The portfolio summary spreadsheet should be appended to the pre-exam supervisor report and submitted to the RCPA prior to the oral examination at a time determined by the RCPA. The summary will be reviewed by the Registrar, Board of Education and Assessment or delegate and the Principal Examiner. The signatories and trainees may be contacted to confirm evidence of satisfactory completion.

Note: The actual portfolio should not be sent unless requested for audit.

Table: Portfolio Requirements for Forensic Science.

	Item	**Part I**	**Part II**	**Evidence**
1	**Supervisor report/s** with brief reflection (maximum 1 page) on the supervisor's comments for each report.	Annual reports (and end of rotation reports if applicable). An additional pre-exam report is required in the year of the Part I and Part II assessments		See Supervisor Report guidelines and forms Appendix
2	**DOPS** competence	Minimum of four (4) with one (1) from another forensic science discipline, to be completed satisfactorily before Part I examinations	Minimum of eight (8) in total, to be completed satisfactorily before Part II examinations	All forms signed as satisfactory by supervisor or other appropriately qualified person as agreed/delegated by Supervisor.
3	**CbDs**	Five or more Case-based discussions before the Part I examinations		All forms/ reports signed as satisfactory by supervisor or other appropriately qualified

	Item	Part I	Part II	Evidence
4	**Short Case Reports** of 1000 words	Three or more short case reports before the Part I examinations		person as agreed/delegated by Supervisor. Short case reports to be included in portfolio.
5	**Clinical meetings** (laboratory, multidisciplinary) Plus a list of entities presented at each meeting	A combined total of at least five (5) learning activities with a minimum of one (1) in each type per year		Each meeting logged should be signed by the supervisor or another person as agreed/delegated by the Supervisor to verify the trainee's involvement in the meeting.
6	**Teaching sessions** Sessions conducted for students, colleagues, medical colleagues or other audiences. Educational material development			
7	**Scientific forums** Plus the abstracts presented at each meeting			
8	**RCPA Laboratory Management modules**	to be completed satisfactorily before Part I examinations		Signed as satisfactorily completed by supervisor
9	**RCPA Ethics and Confidentiality modules**			
10	**Research Management Report** of 1000 words		to be completed satisfactorily before Part II examinations	Signed as satisfactorily completed by supervisor, report to be included in portfolio.

Appendix 2 – Logbook and Forms

This appendix contains master copies of forms and logbook pages to be used to record activities for the portfolio. Please make as many copies as you need and file the completed forms in the portfolio folder. The forms include:

- Logbook page
- Short Case Report Assessment Form (Part I)
- Case Based Discussion Assessment Form (Part I)
- DOPS Competency Form: Forensic Toxicology
- DOPS Competency Form: Forensic Molecular Biology
- DOPS Competency Form: Mortuary Science
- DOPS Competency Form: Forensic Anthropology
- DOPS Competency Form: Forensic Entomology

RCPA The Royal College of Pathologists of Australasia	**Logbook**
Trainee name:	
Supervisor's name:	

Record the details of each learning activity in the table below. This will form part of your portfolio. This form should be copied as required throughout training.

Description of learning activity	Date	Comments	Initial

Supervisor's signature: **Date:**

RCPA The Royal College of Pathologists of Australasia	**Forensic Science Laboratory Standards** **Short Case Report Assessment Form**	
Trainee name	**Trainee ID (RCPA)**	**Stage of training** Y1 Y2 Y3 Y4 Y5 if > Y5 please specify
Assessor's name	**Assessor's position** ☐ Pathologist ☐ Scientist ☐ Other ……..(please specify)	

Please indicate (✓) if each of the following was deemed Satisfactory (S) or Unsatisfactory (U)

Aspect of Report	S	U
Clear layout of text with appropriate headings and paragraphs. Figures and tables are well planned and easy to understand		
Correct, concise English without spelling or grammatical errors		
Clear introduction, that covers the background of the topic & introduces the rest of the report		
The main body of the report is well organised, easy to read and answers the question that has been set.		
A full range of appropriate sources has been used to research the case/topic, including textbooks, journals, websites, personal communications, surveys and/or experiments		
The conclusion accurately summarises the arguments that have been presented		
References are relevant and are cited accurately in the *Pathology* journal format		
No large amounts of irrelevant material & text		

Please comment on other relevant aspects, especially on aspects for improvement

Please indicate the overall standard of the report: ☐ SATISFACTORY ☐ UNSATISFACTORY

Signature of assessor	**Signature of Trainee**
Date completed	
Training Site	

RCPA The Royal College of Pathologists of Australasia	**Forensic Science Laboratory Standards Case based Discussion (CbD) Assessment Form**	
Trainee name	**Trainee ID (RCPA)**	**Stage of training** Y1 Y2 Y3 Y4 Y5 if > Y5 please specify
Assessor's name	**Assessor's position** ☐ Pathologist ☐ Scientist ☐ Other…… (please specify)	

Area of discussion (tick as many as apply)

- ☐ The Australian Legal System; Rules of Evidence
- ☐ Ethical issues of Forensics with regard to the law, science and evidence
- ☐ Human rights issues
- ☐ Contextual bias
- ☐ Wrong conviction or 'near miss' wrong conviction
- ☐ Crime and Death scene management
- ☐ Mass fatality / Disaster Victim Identification (DVI)
- ☐ Preservation of samples / Chain of custody
- ☐ A concept relevant to your sub-discipline
- ☐ Occupational Health & Safety
- ☐ Other - specify

Complexity of case: ☐ Low ☐ Medium ☐ High

Brief description of case presented, discussed and assessed

Why was this case selected for discussion?

Does this case broaden the trainee's experience by being different from previous cases that have been discussed? ☐ Yes ☐ No ☐ N/A

Please comment on whether these aspects of the Trainee's performance are Satisfactory (S) or Unsatisfactory (U)	**S**	**U**	**N/A**
Ability to present case clearly and concisely			
Good understanding of clinical issues relating to the case			
Good understanding of laboratory issues relating to the case			
Depth of understanding and awareness of current literature relevant to this case			
Ability to interpret results in a balanced and rational way			
Ability to provide and clearly communicate well reasoned professional advice			

Ability to clinically correlate the laboratory test results or information to who need to know			
Ability to suggest further relevant or more useful tests or other approaches towards the issue.			
Understanding of management and financial aspects of the case			

Please comment on the overall skills in effective communication

Please comment on other relevant aspects, especially on aspects for improvement

Final outcome (please tick)	**Date of CbD**	**Time taken for CbD**	**Time taken for feedback**
☐ Satisfactory ☐ Unsatisfactory			

Assessor		**Signature of Trainee**
_____	_____	_____
Name (please print)	Signature	Signature

Training Site

RCPA The Royal College of Pathologists of Australasia	**Forensic Science Laboratory Standards – Forensic Toxicology** **Directly Observed Practical Skills (DOPS) Competency Form**	
Trainee name	**Trainee ID (RCPA)**	**Stage of training** Y1 Y2 Y3 Y4 Y5 if > Y5 please specify
Assessor's name	**Assessor's position** ☐ Pathologist ☐ Scientist ☐ Other …… (please specify)	

Please indicate the area of competence for this form from the options below

To be completed in Part I:

☐ Log in exhibits, ensure continuity and security of toxicology samples, activate analysis AND Secure, package, label, document items from a mock crime/death scene for later forensic science evaluation

☐ Delivering evidence in court situation (such as an inquest, trial, moot court)

☐ Safe disposal of hazardous materials (includes blood, chemicals etc) AND follow up an Occupational Health and safety Incident Report involving possible contact with infectious human material

AND ONE OF THE FOLLOWING

☐ Identify, appropriately record, secure, package, label and document the recovery of surface human remains in a (simulated) field situation for later forensic evaluation OR

☐ Collect entomology specimens from a cadaver for later forensic science evaluation OR

☐ Admit a (mock) deceased to the mortuary OR

☐ Evaluate a specified procedure from the point of view of opportunities for DNA contamination OR

☐ Participation in DVI process (include exercises)

To be completed prior to Part II examinations (may complete in part I if related to early [E] outcomes):

☐ Weigh out drugs for analysis including appropriate labelling and calculations associated with drug preparation AND Operate positive and air displacement pipettes and dispense accurate volumes for extraction purposes AND Prepare toxicology sampling kits for clinical and post-mortem toxicology

☐ Analyse forensic specimens for drug screening by immunoassay

☐ Extract and analyse forensic specimens for: alcohol estimation by gas chromatography AND drug screening using gas chromatography/ mass spectrometry AND drug estimation using high performance liquid chromatography/mass spectrometry

☐ Process analytical data and authorise analytical assays for reporting of results in accordance with accreditation procedures AND Write a minimum of 10 medico-legal toxicology reports covering the range of reports prepared by the laboratory AND Write at least 3 medico-legal toxicology opinions relating to the interpretation of toxicology findings (which includes presence of alcohol and drugs)

Please comment on whether these aspects of the trainee's performance are as expected for the stage of training *(Part II DOPS to be assessed at Part II standards even if being done during Part I)*	**Yes**	**No**	**n/a**
Handling of remains or evidence: observing safety, chain of custody and with respect			
Selects and correctly uses appropriate equipment, according to standard operating procedures			
Interpret and discuss findings, with respect to case/ situation at hand			
Discuss anomalies and resolve uncertainties			
Record appropriate information to a high standard			
Safe work practices and observes appropriate workplace health and safety requirements			
Timely, efficient, cooperative performance			

Please comment on other relevant aspects, especially on aspects for improvement

Final outcome (please tick)	**Time taken for DOPS**	**Number of procedures**	**Time taken for feedback**
☐ As expected for the stage of training ☐ Below expected for the stage of training			

Signature of assessor	**Signature of Trainee**

Training Site

Date completed

RCPA The Royal College of Pathologists of Australasia	**Forensic Science Laboratory Standards – Forensic Molecular Biology Directly Observed Practical Skills (DOPS) Competency Form**	
Trainee name	**Trainee ID (RCPA)**	**Stage of training** Y1 Y2 Y3 Y4 Y5 if > Y5 please specify
Assessor's name	**Assessor's position** ☐ Pathologist ☐ Scientist ☐ Other……..(please specify)	

Please indicate the area of competence for this form from the options below

To be completed in Part I:

☐ Receipt of samples and demonstrate ability to maintain continuity of custody of evidence AND secure, package, label and document items from a mock crime/death scene for later forensic evaluation

☐ Evaluate a specified procedure from the point of view of opportunities for DNA contamination

☐ Discussing findings with colleagues/ Delivering evidence in court situation (e.g. moot court)
OR Participation in a DVI case or exercise

AND ONE OF THE FOLLOWING

☐ Admit a (mock) deceased to the mortuary OR

☐ Collect entomology specimens from a cadaver for later forensic science evaluation OR

☐ Log in exhibits, ensure continuity and security of toxicology samples, and activate analysis OR

☐ Identify, appropriately record, secure, package, label and document surface human remains in a (simulated) field situation for later forensic evaluation

To be completed prior to Part II examinations (may complete in part I if related to early [E] outcomes):

☐ DNA extraction from at least two of the following sample types: FTA card; buccal swab; blood stain; blood, tissue; or bone. Minimum of ten DNA extractions

☐ DNA quantification (using, for example, real time PCR or gel electrophoresis). Minimum of ten DNA quantifications

☐ Report writing (includes mock cases). Minimum of ten reports covering the range of reports prepared by the laboratory

AND ONE OF THE FOLLOWING

☐ DNA typing using STR analysis (using commercial or in-house STR kit) – minimum of ten STR runs AND evaluate STR typing data, single source and/or mixed profile – minimum of ten profiles AND
statistical analysis of STR data, direct or kinship matching – minimum of ten comparisons.
OR

☐ DNA typing using Y-STR analysis (using commercial or in-house Y-STR kit) – minimum of ten Y-STR runs AND evaluate Y-STR typing data – minimum of ten profiles AND statistical analysis of Y-STR
data (direct matching) – minimum of ten comparisons.
OR

☐ Mitochondrial DNA (mtDNA) typing using sequencing analysis (using sanger or massive parallel sequencing) and/or SNP analysis (using commercial or in-house SNP panel) – minimum of ten mtDNA sequencing or SNP runs AND evaluate mtDNA typing data – minimum of ten profiles or data sets
AND statistical analysis of mtDNA data (direct matching) – minimum of ten direct comparisons.

Please comment on whether these aspects of the trainee's performance are as expected for the stage of training *(Part II DOPS to be assessed at Part II standards even if being done during Part I)*	**Yes**	**No**	**n/a**
Handling of remains or evidence: observing safety, chain of custody and with respect			
Selects and correctly uses appropriate equipment, according to standard operating procedures			
Interpret and discuss findings, with respect to case/ situation at hand			
Discuss anomalies and resolve uncertainties			
Record appropriate information to a high standard			
Safe work practices and observes appropriate workplace health and safety requirements			
Timely, efficient, cooperative performance			

Please comment on other relevant aspects, especially on aspects for improvement

Final outcome (please tick) ☐ As expected for the stage of training ☐ Below expected for the stage of training	**Time taken for DOPS**	**Number of procedures**	**Time taken for feedback**

Signature of assessor	**Signature of Trainee**

Training Site

Date completed

RCPA The Royal College of Pathologists of Australasia	**Forensic Science Laboratory Standards – Mortuary Science** **Directly Observed Practical Skills (DOPS) Competency Form**	
Trainee name	**Trainee ID (RCPA)**	**Stage of training** Y1 Y2 Y3 Y4 Y5 if > Y5 please specify
Assessor's name	**Assessor's position** ☐ Pathologist ☐ Scientist ☐ Other ……(please specify)	

Please indicate the area of competence for this form from the options below

To be completed in Part I:

☐ Receipt of samples and demonstrate ability to maintain continuity of custody of evidence AND Secure, package, label, document items from a mock crime/death scene for later forensic science evaluation

OR

Participate as a scene or mortuary recorder/ exhibits officer in a DVI case or exercise

☐ Admit and release a (mock) deceased to the mortuary (including personal items)

☐ Safe disposal of hazardous materials (includes blood, chemicals etc) AND Follow up an Occupational Health and safety Incident Report involving possible contact with infectious human material

AND ONE OF THE FOLLOWING

☐ Identify, appropriately record, secure, package, label and document the recovery of surface human remains in a (simulated) field situation for later forensic evaluation OR

☐ Collect entomology specimens from a cadaver for later forensic science evaluation OR

☐ Log in exhibits, ensure continuity and security of toxicology samples, and activate analysis OR

☐ Evaluate a specified procedure from the point of view of opportunities for DNA contamination

To be completed prior to Part II examinations (may complete in part I if related to early [E] outcomes):

☐ Standard complete adult autopsy: up to and including evisceration AND obtain a comprehensive range of samples (e.g. toxicology, microbiology, DNA, biochemistry) for analysis AND Imaging: Photography – take a full set of external and internal autopsy photographs AND complete restoration of an adult body which has undergone a complete autopsy AND preparation of body for long term storage

☐ Advanced autopsy: infant and fetal autopsy up to and including evisceration (in accordance with local policy) AND Radiology - subject a deceased to CT examination and/or plain radiography (only if equipment available and in accordance with local law) AND (at least 3 from:

i) removal of entire spinal cord and securing it for preservation;

ii) in situ neck dissection;

iii) exposure of middle ear, examination of bone marrow, removal of eyes,

iv) exposure of joints (e.g. knee, hip, sacro-iliac and others)

v) dissection of soft tissues

☐ Hazards: High risk (infectious) autopsy up to and including evisceration (mock case) AND Cleaning of mortuary and autopsy equipment AND Safe lifting / moving of obese bodies

☐ Run the mortuary phase of a DVI (can be exercise)

Please comment on whether these aspects of the trainee's performance are as expected for the stage of training *(Part II DOPS to be assessed at Part II standards even if being done during Part I)*	**Yes**	**No**	**n/a**
Handling of remains or evidence: observing safety, chain of custody and with respect			
Selects and correctly uses appropriate equipment, according to standard operating procedures			
Interpret and discuss findings, with respect to case/ situation at hand			
Discuss anomalies and resolve uncertainties			
Record appropriate information to a high standard			
Safe work practices and observes appropriate workplace health and safety requirements			
Timely, efficient, cooperative performance			

Please comment on other relevant aspects, especially on aspects for improvement

Final outcome (please tick) ☐ As expected for the stage of training ☐ Below expected for the stage of training	**Time taken for DOPS**	**Number of procedures**	**Time taken for feedback**

Signature of assessor	**Signature of Trainee**

Training Site

Date completed

RCPA The Royal College of Pathologists of Australasia	**Forensic Science Laboratory Standards – Forensic Anthropology Directly Observed Practical Skills (DOPS) Competency Form**	
Trainee name	**Trainee ID (RCPA)**	**Stage of training** Y1 Y2 Y3 Y4 Y5 if > Y5 please specify
Assessor's name	**Assessor's position** ☐ Pathologist ☐ Scientist ☐ Other……(please specify)	

Please indicate the area of competence for this form from the options below

To be completed in Part I:

☐ Receipt of samples and demonstrate ability to maintain continuity of custody of evidence + Identify, appropriately record, secure, package, label and document surface human remains in a (simulated) field situation for later forensic evaluation

☐ Discussing findings with colleagues/ Delivering evidence in court situation (e.g. moot court) OR Participation in a DVI case or exercise

☐ Follow up an Occupational Health and safety Incident Report involving possible contact with infectious human material

AND ONE OF THE FOLLOWING

☐ Admit a (mock) deceased to the mortuary OR

☐ Collect entomology specimens from a cadaver for later forensic science evaluation OR

☐ Log in exhibits, ensure continuity and security of toxicology samples, and activate analysis OR

☐ Evaluate a specified procedure from the point of view of opportunities for DNA contamination

To be completed prior to Part II examinations (may complete in part I if related to early [E] outcomes):

☐ Distinguish human skeletal remains from non-human skeletal remains; including remains in a fragmented state

☐ Collection of a suitable sample for DNA extraction, with appropriate packaging and documentation

☐ Identify and appropriately record blunt, sharp and ballistic injuries on bone AND Identify and appropriately record skeletal injury on CT scanning images

☐ Biological profile estimation of personal age, sex and ancestry from human skeletal remains AND from CT scanning images of a human skull AND Application of appropriate biostatistical analysis AND Reconstruct a complete human skeleton and appropriately photograph and record

Please comment on whether these aspects of the trainee's performance are as expected for the stage of training *(Part II DOPS to be assessed at Part II standards even if being done during Part I)*	**Yes**	**No**	**n/a**
Handling of remains or evidence: observing safety, chain of custody and with respect			
Selects and correctly uses appropriate equipment, according to standard operating procedures			
Interpret and discuss findings, with respect to case/ situation at hand			
Discuss anomalies and resolve uncertainties			
Record appropriate information to a high standard			
Safe work practices and observes appropriate workplace health and safety requirements			
Timely, efficient, cooperative performance			

Please comment on other relevant aspects, especially on aspects for improvement			
Final outcome (please tick) ☐ As expected for the stage of training ☐ Below expected for the stage of training	**Time taken for DOPS**	**Number of procedures**	**Time taken for feedback**
Signature of assessor	**Signature of Trainee**		
Training Site			
Date completed			

RCPA The Royal College of Pathologists of Australasia	**Forensic Science Laboratory Standards – Forensic Entomology Directly Observed Practical Skills (DOPS) Competency Form**	
Trainee name	**Trainee ID (RCPA)**	**Stage of training** Y1 Y2 Y3 Y4 Y5 if > Y5 please specify
Assessor's name	**Assessor's position** ☐ Pathologist ☐ Scientist ☐ Other ……(please specify)	

Please indicate the area of competence for this form from the options below

To be completed in Part I:

☐ Manage receipt and storage of entomological evidence and demonstrate ability to maintain continuity of custody of evidence AND collection of entomological evidence at the crime scene/mortuary (in stages)

☐ Pinning and labelling an insect AND rearing larval insect evidence to adulthood

☐ Discussing findings with colleagues/ delivering evidence in court situation (e.g. moot court) OR participation in a DVI case or exercise

AND ONE OF THE FOLLOWING

☐ Identify, appropriately record, secure, package, label and document the recovery of surface human remains in a (simulated) field situation for later forensic evaluation OR

☐ Admit a (mock) deceased to the mortuary OR

☐ Log in exhibits, ensure continuity and security of toxicology samples, and activate analysis OR

☐ Evaluate a specified procedure from the point of view of opportunities for DNA contamination

To be completed prior to Part II examinations (may complete in part I if related to early [E] outcomes):

☐ Morphological identification of a fly larva and of an adult fly

☐ Molecular identification of a blowfly/flesh fly larva

☐ Maintenance of a colony of blowflies through at least two generations (done in stages) AND retrospective weather station temperature correction (done in stages, including organising for the data logger to be placed and retrieved)

☐ Explanation of evidence collection protocols to SOCOs/mortuary staff AND Review a case submitted by lawyers for an accused person for entomological review (exercise) AND CT scanner insect evidence analysis

Please comment on whether these aspects of the trainee's performance are as expected for the stage of training *(Part II DOPS to be assessed at Part II standards even if being done during Part I)*	**Yes**	**No**	**n/a**
Handling of remains or evidence: observing safety, chain of custody and with respect			
Selects and correctly uses appropriate equipment, according to standard operating procedures			
Interpret and discuss findings, with respect to case/ situation at hand			
Discuss anomalies and resolve uncertainties			

Record appropriate information to a high standard			
Safe work practices and observes appropriate workplace health and safety requirements			
Timely, efficient, cooperative performance			

Please comment on other relevant aspects, especially on aspects for improvement

Final outcome (please tick)	**Time taken for DOPS**	**Number of procedures**	**Time taken for feedback**
☐ As expected for the stage of training ☐ Below expected for the stage of training			

Signature of assessor	**Signature of Trainee**

Training Site

Date completed

Appendix 3 – Guidelines for Faculty of Science Reports (Part II)

The Part II assessment requires four (4) Reports of 3000-5000 words. These should be of a standard publishable in a journal such as *Pathology* or the *Journal of Forensic Sciences*.

The focus of the Report could range from a single patient case or case series to a large population depending on the discipline involved and the complexity of the situation under investigation. The Reports should demonstrate the candidate's approach to analysing the clinical/ pathological problem or issue in the case(s) or the population (including a relevant review of the literature) and follow up action/discussion based on principles of Evidence-based clinical Laboratory Practice.

It is also expected that some Reports will demonstrate the candidate's ability to be innovative, assure quality and consider management issues such as staff, instrument and reagent costs. Where applicable a Report should comment on issues such as, but not limited to, method selection, method validation, method development and trouble-shooting.

Based on the above approach, following are some suggestions appropriate as Report aims:

- The introduction or development of a new test or procedure and comparisons with current best practice
- Transference of an existing test or procedure to a new context, sample type or processing protocol and comparing it to current practice
- A study that examines the sensitivity and specificity of a test or procedure, including positive and negative predictive values in a particular population
- A detailed analysis of cumulative laboratory data (including case series)
- A study comparing specific populations

Please note that the above list is not exhaustive. Trainees may discuss with their supervisor and determine any other aim, and inform the College administration well before planning the work involved. The Principal Examiner will confirm the appropriateness of the aim.

In Forensic Science the Reports should relate to learning outcomes contained within the sections of the Part II: Forensic Laboratory Standards of the sub-discipline (Forensic Toxicology/Forensic Molecular Biology/Mortuary Science/Forensic Anthropology/Forensic Entomology) of the candidate. Of the four reports at least two should address Advanced [A] learning outcomes. Not more than two Reports should be submitted per section.

The Reports will be independently marked by two examiners in the relevant discipline and candidates will be given feedback. Candidates are encouraged to submit their Reports early in Part II, and at least 2 Reports should be submitted by the end of the fourth year of training.

Format

1. An electronic copy in pdf format should be submitted.
2. The first page should have the Trainee's RCPA number and the word count (excluding references). For examination and feedback purposes page numbers should be provided for the whole document and line numbers should be provided for all text.
3. The Trainee's name should NOT be displayed anywhere in the document.
4. Any information and contributions provided by others should be clearly identified. Do NOT give personal or institutional details of the individuals concerned. The Report submitted should be primarily the candidate's own work and any attribution of authorship should take place only at the time of possible publication.
5. The manuscript and reference format should comply with the requirements for the journal *Pathology*. http://edmgr.ovid.com/pat/accounts/ifauth.htm

Marking criteria

1. Demonstrates one or more of the Report aims.
2. Demonstrates appropriate principles of Evidence Based Laboratory Practice
3. Introduction discusses the literature and placement of the study in context.
4. Methodology is appropriate. Method described in sufficient detail to allow the study to be replicated; comments on method selection, method validation, method development and trouble-shooting.
5. Analysis: Quantitative or qualitative
6. Results
7. Discussion
   i. Interpretation of results or critical analysis of literature
   ii. Placement of results in context of the available literature
   iii. Limitations of the study
   iv. Lessons derived are adequately discussed; implications are related to the candidate's own situation and the broader context of the field
8. Format of the paper
   i. Complies with the requirements for the journal *Pathology* http://edmgr.ovid.com/pat/accounts/ifauth.htm
   ii. Reference List
   iii. Writing style syntax, spelling/ typographical errors
   iv. Graphs and tables.

Reports will be graded as either Satisfactory or Unsatisfactory. Unsatisfactory reports will be returned to the candidate for revision, addressing of feedback, and resubmission to the RCPA for remarking.

Any publications arising from the Reports may be used to meet the requirements of the Research Standards component of the curriculum. Candidates are encouraged to publish their Reports subsequent to examination.

Declaration of originality
Each Report must be accompanied by a signed declaration of originality. Please use the form on the next page and do NOT incorporate the form into the Report, to preserve anonymity. The College's policy is that Trainees who submit work that is not their own will fail and the matter will be referred to the Board of Education and Assessment.

Submitting the report and originality declaration

Please email the report and the signed declaration of originality to the RCPA at **exams@rcpa.edu.au**. The declaration and the report will be kept on file at the College. E-copies will be sent to examiners. Please refer to RCPA website for due dates.

The Royal College of Pathologists of Australasia

Declaration for Faculty of Science Reports

Trainee declaration:

I certify that this Report, titled:

……

……

……

……

is my own original work and that the work documented was completed as part of my personal supervised practice during my accredited training. It has not been previously submitted for assessment and has not been used by any other trainee in this laboratory. I have read and understand RCPA Policy 10/2002 - Plagiarism and Cheating in Examinations.

Trainee Name……RCPA ID……..

Trainee signature…… date……..

Supervisor declaration:

As the supervisor for ……, I certify that the work documented was completed personally by him/her during training. The Report is original and has not been used by any other trainee in this laboratory. I have reviewed this item and read the relevant RCPA requirements and believe it is suitable for submission to the RCPA examiners.

Supervisor name (print).....

Supervisor signature…….....date……

Appendix 4 - Assessment Matrix – Forensic Toxicology

Standard	Outcomes to be assessed *(From the Faculty of Science curriculum)*	Part I		Part II					Portfolio				
		Written exam (SAQ)	Structured oral exam	Written exam (report)	Structured oral exam	Thesis	Articles published	Faculty of Science Reports	DOPS	CbDs	Short case reports	Other reports	suggestions for portfolio evidence*
Clinical Laboratory – I	1 Domestic legal framework	Y								Y	Y		1,2
	2 International issues in Forensic Science	Y								Y	Y		2
	3 Introduction to Crime/ Death Scene Management	Y	Y							Y	Y		1
	4.1 Forensic Toxicology – liaison and exhibit handling, basic laboratory techniques	Y	Y						Y	Y	Y		1,2,4
	4.2 Basic principles of molecular biology	Y	Y						P				
	4.3 Basic principles of a Mortuary Science service	Y	Y						P				
	4.4 Basic principles and practice of Forensic Anthropology	Y	Y						P				
	4.5 Basic principles and practice of Forensic Entomology	Y	Y						P				
	4.6 Basic principles/ practice of pathology, clinical forensic medicine, forensic odontology	Y	Y										
	4.7 Working with Forensic Medicine – strengths, weaknesses, contextual bias	Y	Y							Y	Y		1,2
	4.8 Mass Fatality & Disaster Victim Identification	Y	Y						P				
	4.9 Occupational health and Safety	Y							Y	Y			6
Clinical Laboratory – II	FT1 Analytical techniques		P	P	P			Y	Y				
	FT2 Specimens		P	Y	Y			Y	Y				
	FT3 Alcohol		P	Y	Y			Y	Y				
	FT4 Drugs of abuse			Y	Y			Y					
	FT5 Pharmacology of drugs		P	Y	Y			Y	Y				
	FT6 Interpretation of drug results			Y	Y			Y	Y				
Innovation Leadership	I1 Quality and safety of laboratory practices	Y	P		Y			Y					4,5,6,7
	I2 Leadership and innovation in developing the discipline	P	P		Y	P	P	Y	P			P	8,9
	I3 Evidence Based Laboratory Practice in decision making	Y	P		Y			Y	P				1,3
Res-earch	R1 Conducting Research				Y	Y	Y	P					
	R2 Research Management & administration				Y	P						Y	
	R3 Research Communication				Y		Y						1,2

Y = Yes P = Possibly

* Portfolio categories: 1. Attendance/ presentations at laboratory/ multidisciplinary meetings; 2. Attendance/ presentations at scientific forums e.g. conferences; 3. Teaching sessions; 4. Attendance at management meetings; 5. Quality activities; 6. Incident reports; 7. RCPA Management module; 8. RCPA Ethics module; 9. Educational material development

Appendix 5 - Assessment Matrix – Forensic Molecular Biology

Standard	Outcomes to be assessed *(From the Faculty of Science curriculum)*	Part I		Part II					Portfolio				
		Written exam (SAQ)	Structured oral exam	Written exam (report)	Structured oral exam	Thesis	Articles published	Faculty of Science Reports	DOPS	CbDs	Short case reports	Other reports	suggestions for portfolio evidence*
Clinical Laboratory – I	1 Domestic legal framework	Y								Y	Y		1,2
	2 International issues in Forensic Science	Y								Y	Y		2
	3 Introduction to Crime/ Death Scene Management	Y	Y							Y	Y		1
	4.1 Forensic Toxicology – liaison and exhibit handling, basic laboratory techniques	Y	Y						P				
	4.2 Basic principles of molecular biology	Y	Y						Y	Y	Y		1,2,4
	4.3 Basic principles: Mortuary Science service	Y	Y						P				
	4.4 Basic principles and practice of Forensic Anthropology	Y	Y						P				
	4.5 Basic principles and practice of Forensic Entomology	Y	Y						P				
	4.6 Basic principles/ practice of pathology, clinical forensic medicine, forensic odontology	Y	Y										
	4.7 Working with Forensic Medicine – strengths, weaknesses, contextual bias	Y	Y							Y	Y		1,2
	4.8 Mass Fatality & Disaster Victim Identification	Y	Y						Y	Y			
	4.9 Occupational health and Safety	Y							Y	Y			6
Clinical Laboratory – II	FMB1 Laboratory practice theory		P	Y				Y	Y				
	FMB2 Laboratory practice operations		P	Y	Y			Y	Y				
	FMB3 DNA recovery methods		P	P	P			Y	Y				
	FMB4 Techniques/analysis: nDNA/Y-STR/mtDNA		P	P	P			Y	Y				
	FMB5 Case review		P	Y				P					
	FMB6 DNA profiling in non-human forensics			Y				Y					
	FMB7 Foundations of laboratory management		P	Y	Y			Y	Y				
	FMB8 DVI		P	Y	Y			Y	Y				
Innovation Leadership	I1 Quality and safety of laboratory practices	Y	P		Y			Y					4,5,6,7
	I2 Leadership and innovation in developing the discipline	P	P		Y	P	P	Y	P			P	8,9
	I3 Evidence Based Laboratory Practice in decision making	Y	P		Y			Y	P				1,3
Res-earch	R1 Conducting Research				Y	Y	Y	P					
	R2 Research Management & administration				Y	P						Y	
	R3 Research Communication				Y		Y						1,2

Y = Yes P = Possibly

* Portfolio categories: 1. Attendance/ presentations at laboratory/ multidisciplinary meetings; 2. Attendance/ presentations at scientific forums e.g. conferences; 3. Teaching sessions; 4. Attendance at management meetings; 5. Quality activities; 6. Incident reports (one report mandatory in Part I); 7. RCPA Management module; 8. RCPA Ethics module; 9. Educational material development

Appendix 6 - Assessment Matrix – Mortuary Science

Standard	Outcomes to be assessed *(From the Faculty of Science curriculum)*	Part I		Part II					Portfolio				
		Written exam (SAQ)	Structured oral exam	Written exam (report)	Structured oral exam	Thesis	Articles published	Faculty of Science Reports	DOPS	CbDs	Short case reports	Other reports	suggestions for portfolio evidence*
Clinical Laboratory – I	1 Domestic legal framework	Y								Y	Y		1,2
	2 International issues in Forensic Science	Y								Y	Y		2
	3 Introduction to Crime/ Death Scene Management	Y	Y							Y	Y		1
	4.1 Forensic Toxicology – liaison and exhibit handling, basic laboratory techniques	Y	Y						P				
	4.2 Basic principles: molecular biology	Y	Y						P				
	4.3 Basic principles: Mortuary Science service	Y	Y						Y	Y	Y		1,2,4
	4.4 Basic principles and practice of Forensic Anthropology	Y	Y						P				
	4.5 Basic principles and practice of Forensic Entomology	Y	Y						P				
	4.6 Basic principles/ practice of pathology, clinical forensic medicine, forensic odontology	Y	Y										
	4.7 Working with Forensic Medicine – strengths, weaknesses, contextual bias	Y	Y							Y	Y		1,2
	4.8 Mass Fatality & Disaster Victim Identification	Y	Y						Y	Y			
	4.9 Occupational health and Safety	Y							Y	Y			6
Clinical Laboratory – II	MS1 Mortuary practice theory - relevant laws		P	Y				Y					
	MS2 Principles of mortuary practice: cases & findings, techniques, evidence handling, interactions		P	Y	Y			Y	Y				
	MS3 Foundations of Mortuary Management: OH&S, specimen/facilities management, communication		P	Y	Y			Y	Y				
	MS4 Post Mortem techniques: examination, specimen collection, photography, restoration		P	P	P			Y	Y				
	MS5 Disaster Victim / Multiple body management		P	Y	Y			Y	Y				
Innovation Leadership	I1 Quality and safety of laboratory practices	Y	P		Y			Y					4,5,6,7
	I2 Leadership and innovation in developing the discipline	P	P		Y	P	P	Y	P			P	8,9
	I3 Evidence Based Laboratory Practice in decision making	Y	P		Y			Y	P				1,3
Res-earch	R1 Conducting Research				Y	Y	Y	P					
	R2 Research Management & administration				Y	P						Y	
	R3 Research Communication				Y		Y						1,2

Y = Yes P = Possibly

* Portfolio categories: 1. Attendance/ presentations at laboratory/ multidisciplinary meetings; 2. Attendance/ presentations at scientific forums e.g. conferences; 3. Teaching sessions; 4. Attendance at management meetings; 5. Quality activities; 6. Incident reports; 7. RCPA Management module; 8. RCPA Ethics module; 9. Educational material development

Appendix 7 - Assessment Matrix – Forensic Anthropology

Standard	Outcomes to be assessed *(From the Faculty of Science curriculum)*	Part I		Part II					Portfolio				
		Written exam (SAQ)	Structured oral exam	Written exam (report)	Structured oral exam	Thesis	Articles published	Faculty of Science Reports	DOPS	CbDs	Short case reports	Other reports	suggestions for portfolio evidence*
Clinical Laboratory – I	1 Domestic legal framework	Y								Y	Y		1,2
	2 International issues in Forensic Science	Y								Y	Y		2
	3 Introduction to Crime/ Death Scene Management	Y	Y							Y	Y		1
	4.1 Forensic Toxicology – liaison and exhibit handling, basic laboratory techniques	Y	Y						P				
	4.2 Basic principles of molecular biology	Y	Y						P				
	4.3 Basic principles of a Mortuary Science service	Y	Y						P				
	4.4 Basic principles and practice of Forensic Anthropology	Y	Y						Y	Y	Y		1,2,4
	4.5 Basic principles and practice of Forensic Entomology	Y	Y						P				
	4.6 Basic principles/ practice of pathology, clinical forensic medicine, forensic odontology	Y	Y										
	4.7 Working with Forensic Medicine – strengths, weaknesses, contextual bias	Y	Y							Y	Y		1,2
	4.8 Mass Fatality & Disaster Victim Identification	Y	Y						Y	Y			
	4.9 Occupational health and Safety	Y							Y	Y			6
Clinical Laboratory – II	FA1 Forensic Anthropology practice theory		P	Y				Y					
	FA2 Foundation knowledge and skills		P	Y	Y			P	Y				
	FA3 Specialised knowledge and skills		P	Y	Y			Y	Y				
	FA4 Practical skills: Anthropological assessment		P	P	P			Y	Y				
	FA5 Report writing			Y	Y			Y	Y				
Innovation Leadership	I1 Quality and safety of laboratory practices	Y	P		Y			Y					4,5,6,7
	I2 Leadership and innovation in developing the discipline	P	P		Y	P	P	Y	P			P	8,9
	I3 Evidence Based Laboratory Practice in decision making	Y	P		Y			Y	P				1,3
Research	R1 Conducting Research				Y	Y	Y	P					
	R2 Research Management & administration				Y	P						Y	
	R3 Research Communication				Y		Y						1,2

Y = Yes P = Possibly * Portfolio categories: 1. Attendance/ presentations at laboratory/ multidisciplinary meetings; 2. Attendance/ presentations at scientific forums e.g. conferences; 3. Teaching sessions; 4. Attendance at management meetings; 5. Quality activities; 6. Incident reports; 7. RCPA Management module; 8. RCPA Ethics module; 9. Educational material development

Appendix 8 - Assessment Matrix – Forensic Entomology

Standard	Outcomes to be assessed *(From the Faculty of Science curriculum)*	Part I		Part II					Portfolio				
		Written exam (SAQ)	Structured oral exam	Written exam (report)	Structured oral exam	Thesis	Articles published	Faculty of Science Reports	DOPS	CbDs	Short case reports	Other reports	suggestions for portfolio evidence*
Clinical Laboratory – I	1 Domestic legal framework	Y								Y	Y		1,2
	2 International issues in Forensic Science	Y								Y	Y		2
	3 Introduction to Crime/ Death Scene Management	Y	Y							Y	Y		1
	4.1 Forensic Toxicology – liaison and exhibit handling, basic laboratory techniques	Y	Y						P				
	4.2 Basic principles of molecular biology	Y	Y						P				
	4.3 Basic principles of a Mortuary Science service	Y	Y						P				
	4.4 Basic principles and practice of Forensic Anthropology	Y	Y						P				
	4.5 Basic principles and practice of Forensic Entomology	Y	Y						Y	Y	Y		1,2,4
	4.6 Basic principles/ practice of pathology, clinical forensic medicine, forensic odontology	Y	Y										
	4.7 Working with Forensic Medicine – strengths, weaknesses, contextual bias	Y	Y							Y	Y		1,2
	4.8 Mass Fatality & Disaster Victim Identification	Y	Y						Y	Y			
	4.9 Occupational health and Safety	Y							Y	Y			6
Clinical Laboratory – II	FE1 Forensic Entomology practice theory		P	Y				Y					
	FE2 Foundation knowledge and skills		P	Y	Y			P	Y				
	FE3 Specialised knowledge and skills		P	Y	Y			Y	Y				
	FE4 Practical skills in Entomological assessment		P	P	P			Y	Y				
Innovation Leadership	I1 Quality and safety of laboratory practices	Y	P		Y			Y					4,5,6,7
	I2 Leadership and innovation in developing the discipline	P	P		Y	P	P	Y	P			P	8,9
	I3 Evidence Based Laboratory Practice in decision making	Y	P		Y			Y	P				1,3
Res-earch	R1 Conducting Research				Y	Y	Y	P					
	R2 Research Management & administration				Y	P						Y	
	R3 Research Communication				Y		Y						1,2

Y = Yes P = Possibly

* Portfolio categories: 1. Attendance/ presentations at laboratory/ multidisciplinary meetings; 2. Attendance/ presentations at scientific forums e.g. conferences; 3. Teaching sessions; 4. Attendance at management meetings; 5. Quality activities; 6. Incident reports (one report mandatory in Part I); 7. RCPA Management module; 8. RCPA Ethics module; 9. Educational material development