



Dermatology Australasia and Australasian College of Dermatologists

Course outline:
Certificate of Skin Imaging

2024

Introduction

The Certificate of Skin Imaging is an online, self-paced course focused on theoretical knowledge. It offers an opportunity to develop or enhance the knowledge and skills in using the various technologies that may be employed to capture effective images of the skin to support medical professionals in their diagnosis and management of skin lesions and disorders.

Some basic information centered on the various methodologies and algorithms employed in the diagnosis of some of the commonly encountered skin lesions/disorders is also covered in the course. This is designed to enhance the student's understanding of how the images developed are used in the diagnosis and treatment processes.

However, completion of this course does not prepare or qualify students to analyse the images for the purposes of diagnosis or treatment.

This course explores:

- the principles and practices associated with a variety of imaging technologies which may be used to support the diagnosis, treatment and ongoing monitoring of skin lesions
- the anatomy and physiology of the skin at an introductory level
- the principles of maintaining health and integrity of the skin
- the application of advanced specialised imaging technologies such as RCM at an introductory level
- relevant infection control measures
- quality management and patient safety considerations.

Techniques/protocols for skin imaging of patients falls into several broad categories each of which may employ one or more imaging technologies/techniques. These include:

- 'Standard' digital photography using DSLR cameras
- 'Specialised' digital imaging using customised DSLR cameras (addition of specialised attachments such as macro lenses, polarisers, microscopy and dermatoscopic interfaces etc)
- Cutaneous Confocal Microscopy (CCM).

The role of the skin imaging technician is to simply gather images using the appropriate technology(ies) as required for other medical professionals to diagnose, treat and manage.

A Melanographer, as opposed to a skin imaging technician, is normally a registered health practitioner such as a registered nurse or a medical practitioner with expertise in the use of the various skin imaging techniques. They are generally involved in surveillance imaging and skin risk assessment together with lesion assessment and triage for further referral.

Graduates of this course cannot represent themselves as Melanographers.

Imaging Protocols

Imaging of patients falls into 4 broad groupings, each of which may involve the local GP, Dermatologist, Melanographer or other health professionals.

General surveillance by local GP

A patient's skin is regularly imaged 'locally' to maintain a watch on normal skin and when considered necessary, lesions which may require ongoing surveillance.

TBP Monitoring

The patient may be referred for TBP only or TBP plus (which includes undiagnosed close-up images), and their doctor will use them in their practice alone.

Full body monitoring

Each section of the body is compared to the matching photograph. The size of lesions is assessed by comparison with the size of those around them, and detection of *change* rather than direct measurement is the aim. At the same time, the *normal skin* of the region can be checked for new lesions.

Combination

For example, a high-risk patient who requires six-monthly reviews may be seen by their doctor once a year and have detailed imaging using an appropriate technology in between.

Target Audience

It is envisaged that the likely participants for the Certificate of Skin Imaging will be those wishing to enhance their existing skills in skin imaging, or those new to the field and have the intention to seek employment within the following domains:

- Technicians who work in a dermatology practice, support research carry out skin imaging.
- Assistants within medical and other dermatologic environments.

Broad Course Aim

The broad aim of this course is to enable the participant to gain or enhance the relevant knowledge and skills necessary to competently and safely conduct dermatologic imaging of patients using a range of appropriate currently used imaging technologies.

Broad Course Learning Outcomes

At the successful completion of this course the participant should be able to:

- Demonstrate a knowledge of basic skin anatomy and the components within the skin structure.
- Relate the value of various technologies currently employed to capture images of the skin for the purposes of diagnosis and ongoing evaluation, management and/or surveillance of commonly encountered skin conditions.
- Demonstrate an understanding of imaging principles and relevant diverse imaging technologies to achieve good quality images of the skin of diagnostic and management purposes.
- Demonstrate a basic understanding of the relationships between lesion pathology and the clinical and dermoscopic features observed for some commonly encountered skin conditions.
- Demonstrate a basic understanding of skin assessment algorithms and other dermatologic tools used by dermatologists and other healthcare practitioners such as dermoscopy and cutaneous confocal microscopy.
- Demonstrate a basic knowledge and understanding of infection control principles and procedures.
- Demonstrate a basic understanding of quality management, patient safety and legal considerations in the clinical environment.

Course outline and structure

The course content will be delivered over 9 Topics, which includes online content and assessments. Participants will have access to online tutorials, learning resources and videos.

Participants will be required to complete all online components and assessments.

Course duration

12 weeks – approximately 3 – 4 hours of study/assessment tasks per week comprising of:

- **30 hours** of e-learning package which includes reading and visual media and an end of module short formative assessment or reflective activities
- **10 hours** of summative assessments.

Total e-learning learner effort: 40 hours.

Topic	Content/Activities/Interactions	Student effort
1. Introduction to the Skin: Basic knowledge of skin relating to imaging for assessment and monitoring purposes: <ol style="list-style-type: none"> Anatomy of the Skin Detailed Skin Structure Anatomic/Topographic variations Terminology - Skin Morphology Appendages of the Skin Skin Types and Ageing Conducting a Skin Exam 	Topic e-learning content Additional Resources: Video tutorials: <ul style="list-style-type: none"> • Skin Checks • Lesion Terminology Assessments: <ul style="list-style-type: none"> • MCQ Quiz 	3 hours 30 minutes
2. Imaging Technologies: Technology solutions for recording the visible external condition of the skin for surveillance and/or diagnosis: <ol style="list-style-type: none"> Digital imaging systems and recording software in dermatological practice. Eg., <ol style="list-style-type: none"> Vectra 360 D200evo VEOSLR Polarizing Dermatoscope Introduction to CCM Other skin monitoring software (non-invasive) Artificial Intelligence and Machine Learning 	Topic e-learning content Readings: Skin Research and Technology – Wiley Additional Resources: Video tutorials: <ul style="list-style-type: none"> • DSLR TBI Session • 3D TBP Procedural Videos Assessments: <ul style="list-style-type: none"> • MCQ quiz 	4 hours 30 minutes

Topic	Content/Activities/Interactions	Student effort
<p>3. Fundamentals of Photography - Digital (DSLR) and Analogue:</p> <ol style="list-style-type: none"> a. Photography in Medicine b. Conventional vs digital photography c. SLR-DSLR- Manual vs automatic d. DSLR functions e. Factors affecting image quality <ol style="list-style-type: none"> i. Focus (FL and DoF) ii. Shutter speed iii. Framing iv. Aperture (fstop) v. ISO rating vi. White balance vii. Lighting 	<p>Topic e-learning content</p> <p>Assessments:</p> <ul style="list-style-type: none"> • MCQs 	<p>3 hours</p> <p>30 minutes</p>
<p>4. Imaging Approaches and Procedural guidelines: For quality imaging using digital cameras and other imaging systems and technologies:</p> <ol style="list-style-type: none"> a. Imaging approaches b. Total Body Photography (TBP – Vectra 360) and Sequential Digital Dermoscopy Lesion imaging (SDDI) c. Lesion surveillance 	<p>Topic e-learning content</p> <p>Additional Resources:</p> <p>Video tutorials:</p> <ul style="list-style-type: none"> • TBP Session • What is 3D TBI • Vectra 3D TBI <p>Assessments:</p> <ul style="list-style-type: none"> • MCQ quiz 	<p>4 hours</p> <p>30 minutes</p>
<p>5. Recognition and assessment of common skin lesions/presentations</p> <ol style="list-style-type: none"> a. Clinical cutaneous assessment <ol style="list-style-type: none"> i. Melanocytic lesions ii. Non-melanocytic lesions iii. Assessment criteria <ul style="list-style-type: none"> ▪ ABCDE iv. Skin lesion assessment tools b. Commonly encountered benign skin lesions c. Commonly encountered melanocytic lesions d. Skin cancers e. Other skin lesions and presentations <ol style="list-style-type: none"> i. Inflammatory conditions <ul style="list-style-type: none"> ▪ Psoriasis ▪ Eczema i. Hypertrophic and keloid scars ii. Burns 	<p>Topic e-learning content</p> <p>Additional Resources:</p> <p>Video tutorials:</p> <ul style="list-style-type: none"> • Dermoscopy for Melanoma • Lesion Morphology <p>Assessments:</p> <ul style="list-style-type: none"> • MCQ quiz 	<p>4 hours</p> <p>30 minutes</p>

Topic	Content/Activities/Interactions	Student effort
<p>6. Introduction to Dermoscopy:</p> <ol style="list-style-type: none"> a. The history, use and benefits of dermoscopy in skin cancer detection/diagnosis b. Imaging techniques c. Using a Dermatoscope d. Lesion imaging e. Dermoscopic features and structures <ol style="list-style-type: none"> i. Structures ii. Colours iii. Pattern analysis <ul style="list-style-type: none"> ▪ The descriptive method ▪ Chaos and clues f. Algorithms and clinical evaluation <ol style="list-style-type: none"> i. ABCDE ii. 2 – step algorithm iii. Other dermoscopic algorithms (Metaphorical descriptors) 	<p>Topic e-learning content</p> <p>Additional resources: Video Tutorials:</p> <ul style="list-style-type: none"> • Dermoscopy Basics • Practical Dermoscopy • Dermoscopy of Melanoma • 2-Step Algorithm <p>Assessments</p> <ul style="list-style-type: none"> • MCQ Quiz 	<p>4.5 hours</p> <p>30 minutes</p>
<p>7. Introduction to Cutaneous Confocal Microscopy (CCM)</p> <ol style="list-style-type: none"> a. CCM Overview b. How CCM works c. Indications and limitations d. Technology and equipment set-up and operation e. Patient preparation f. Principles and guidelines for achieving good quality microscopy images and records g. Data handling 	<p>Topic e-learning content</p> <p>Additional resources: Video Tutorials:</p> <ul style="list-style-type: none"> • Introduction to CCM • CCM – Now and Future • RCM explained <p>Assessments</p> <ul style="list-style-type: none"> • MCQ Quiz 	<p>4.5 hours</p> <p>30 minutes</p>
<p>8. Infection control</p> <ol style="list-style-type: none"> a. Equipment hygiene and maintenance/Safe practice b. Infection control/Prevention of cross infection c. Considerations for broken skin or open wounds – wound management 	<p>Topic e-learning content</p> <p>Additional resources: Video Tutorials:</p> <ul style="list-style-type: none"> • Wet dressing technique <p>Assessment</p> <ul style="list-style-type: none"> • MCQ Quiz 	<p>3 hours</p> <p>30 minutes</p>

Topic	Content/Activities/Interactions	Student effort
9. Quality management, Patient safety and Legal Requirements a) Legislation and skin imaging b) Safety and security in the clinical environment – equipment, patient, personal and data safety c) Privacy and confidentiality d) Skin imaging and consent e) Data collection, storage, protection and dissemination f) Quality assurance g) The healthcare system	Topic e-learning content Assessment <ul style="list-style-type: none"> • MCQ Quiz 	3 hours 30 minutes
Final Assessment	Final Course MCQ Quiz	1 hour
Total suggested study hours (Including online content, additional resources and assessment exercises)		40 hours

Topic Specific Learning Outcomes

TOPIC 1: Introduction to Skin Imaging

After successfully completing this module, participants will be able to:

- Identify and differentiate the layers of the skin with a focus on the structure of the epidermis/dermis.
- Relate the main cell types and structures within the skin to their principal functions.
- Relate skin appendages to their principal functions.
- Apply morphological terminology in describing the skin.
- Relate skin structure and function with the principal anatomical/topographic regions of the body.
- Correlate structural changes in the skin with age.
- Articulate the general process of a full skin examination.

TOPIC 2: Imaging Technologies

After successfully completing this module, participants will be able to:

- Demonstrate an understanding of the technical aspects of current and emerging skin imaging technologies/imaging systems
- Demonstrate an understanding of the basic set-up of imaging systems
- Critically assess which technologies/imaging systems are appropriate for various scenarios/lesions.
- Demonstrate a knowledge and understanding of the difference between AI, MI and ML.

TOPIC: 3 Fundamentals of Photography

After successfully completing this module, participants will be able to:

- Compare, contrast and appraise the differences and idiosyncrasies of digital and film based (analogue) skin imaging systems in producing quality images.
- Identify and demonstrate an understanding of the function of the basic controls of a digital camera.
- Correlate the interrelationships between the various camera controls and the clinical environment to obtain useful quality images of the body and skin under varying conditions.
- Relate specialised image acquisition attachments such as macro lenses, dermatoscopic and microscope convertors, lighting systems and their appropriate applications.

Topic 4: Imaging Approaches and Procedural Guidelines

After successfully completing this module, participants will be able to:

- Explain the role of the skin imaging technician.
- Demonstrate a knowledge and understanding of the methodologies and general guidelines for skin imaging sessions and lesion surveillance.
- Demonstrate a basic knowledge and understanding Macro and Micro approaches to imaging of skin lesions.
- Demonstrate a knowledge and understanding of the procedural guidelines and considerations for conducting an accurate skin cancer assessment session.

Topic 5: Recognition and Assessment of Common Skin Lesions

After successfully completing this module, participants will be able to:

- Relate the value of dermoscopy and other skin assessment tools in the early detection of malignant and non-malignant skin lesions
- Utilise appropriate terminology relevant to the analysis/description of skin imaging and lesion recognition
- Relate assessment criteria to selection of naevi and skin lesions that require imaging for assessment by a specialist dermatologist.
- Assess the value of the range of skin lesion assessment tools currently available.
- Differentiate, using characteristic features between normal skin and common benign skin lesions.
- Differentiate using characteristics features between pre-malignancy and skin cancer

Topic 6: Introduction to Dermoscopy

After successfully completing this module, participants will be able to:

- Demonstrate an understanding and knowledge of what dermoscopy is and how it works
- Demonstrate an understanding of the role and value of dermoscopy in the early detection of malignant and non-malignant skin lesions
- Demonstrate an understanding of how a dermatoscope can be used to obtain useful diagnostic images of skin lesions
- Apply at a basic level, observed dermoscopic features such as colour, patterns and structures to differentiate between malignant and non-malignant lesions
- Apply at a basic level basic the 2-step algorithm to differentiate skin lesions
- Demonstrate an awareness of other algorithms utilised in skin lesion diagnosis

Topic 7: Introduction to CCM

After successfully completing this module, participants will be able to:

- Relate a knowledge and understanding of the basic principles behind the operation of CCM.
- Relate an understanding of the uses, benefits, and application (indications and limitations) of CCM in dermatological diagnosis.
- Demonstrate a knowledge and understanding of the various machines/systems/tools used to obtain quality images.
- Demonstrate the ability to set-up a CCM machine at a basic level under supervision.

Topic 8: Infection Control

After successfully completing this module, participants will be able to:

- Demonstrate an understanding of the importance of maintaining patient safety in the clinical environment.
- Demonstrate a knowledge and ability to implement mechanisms for infection control
- Demonstrate a knowledge of the considerations associated with wound management including broken skin, open and chronic wounds, pre- and post-operative wound care and appropriate wound dressing.
- Demonstrate an ability to maintain at a basic level, equipment/clinic environment hygiene.

Topic 9: Quality Management, Patient Safety and Legal Requirements

After successfully completing this module, participants will be able to:

- Maintain the safety and security of the clinical environment including the equipment used for skin imaging.
- Demonstrate an ability to implement measures appropriate to maintaining safety for patients and personnel in the clinical environment.
- Demonstrate a knowledge and understanding of the key considerations with regard to the legal/legislative implications for skin imaging practice.
- Relate issues associated with privacy, confidentiality and obtaining patient consent to daily practice.
- Demonstrate a knowledge and understanding of current Medicare inclusions for skin cancer surveillance imaging and list sources of information on Medicare.

Assessment of Course Outcomes

Each module requires the successful completion of one or more targeted assessment items which may include where appropriate:

- MCQ quizzes
- End of Course MCQ

(Refer to the course outline table above for details)