

Supplemental Appendix A AHPRA Capability Domains (3)

1 Professional and ethical conduct

- 1.1. Practise in an ethical and professional manner, consistent with relevant legislation and regulatory requirements
 - a. Demonstrate understanding of legal responsibilities
 - b. Manage personal, mental and physical health to ensure fitness to practice
 - c. Follow mandatory and voluntary reporting obligations
 - d. Apply the Medical Radiation Practice Board of Australia's Code of conduct to their practice
 - e. Provide relevant information to patient/client and demonstrate appropriate methods to obtain informed consent
 - f. Demonstrate knowledge of the Australian healthcare system
 - g. Demonstrate understanding of the basic principles underpinning bio-ethics within medical radiation science practice
 - h. Exercise appropriate levels of autonomy and professional judgement in a variety of medical radiation practice settings
- 1.2. Provide each patient/client with an appropriate level of dignity and care
 - a. Demonstrate understanding of the influence of socio-cultural factors on patient / client attitudes and responses to medical radiation services
 - b. Display appropriate professional behaviour in patient/client interactions
 - c. Identify and respect appropriate boundaries between patients/clients and health professionals
- 1.3. Assume responsibility, and accept accountability, for professional decisions
 - a. Recognise and respond appropriately to unsafe or unprofessional practice within their division of registration
 - b. Integrate organisational policies and guidelines with professional standards within their division of registration
 - c. Apply relevant quality frameworks appropriate to their division of registration
- 1.4. Advocate on behalf of the patient/client, when appropriate within the context of the practitioner's particular division of registration
 - a. Demonstrate understanding of the principles of patient/client advocacy and their application to the medical radiation practice
 - b. Recognise when it may be appropriate to intervene on the patient's/client's behalf
 - c. Advise other members of the healthcare team about the suitability and application of the proposed medical radiation procedure, when appropriate

2 Communication and collaboration

- 2.1 Communicate clearly, sensitively and effectively with patient/client and their family or carers
 - a. Establish rapport with patient/client to gain understanding of their issues and perspectives
 - b. Communicate with the patient/client and/or carers to collect and convey information and reach agreement about the purpose of the examination/ treatment, techniques and procedures
 - c. Convey knowledge and procedural information in ways that engender trust and confidence and respects patient/client confidentiality, privacy and dignity
 - d. Respond to patient/client queries or issues

- e. Identify likely communication barriers specific to individual patients/clients and/ or carers
- f. Make appropriate adjustments to communication style to suit the particular needs of the patient/client including those from culturally and linguistically diverse backgrounds and Aboriginal and Torres Strait Islander people
- g. Make provisions to engage third parties to facilitate effective communication when required

2.2 Collaborate with other health practitioners

- a. Establish and maintain effective and respectful working relationships with health practitioners
- b. Demonstrate understanding of professional roles and responsibilities of healthcare team members and other service providers
- c. Follow accepted protocols and procedures to provide relevant and timely verbal and written communication

3 Evidence based practice and professional learning

3.1 Apply critical and reflective thinking to resolve clinical challenges

- a. Describe the clinical challenge or question
- b. Identify information required to respond to the challenge or question
- c. Select appropriate methods to collect and assess evidence
- d. Identify, access or collect information from credible sources
- e. Assess adequacy of information to answer the issue under inquiry
- f. Interpret findings, applying clinical reasoning and reflective processes to identify implications for practice
- g. Review clinical action plans/protocols to take account of findings

3.2 Identify ongoing professional learning needs and opportunities

- a. Demonstrate understanding of legal and professional responsibilities to undertake continuing professional development (CPD)
- b. Critically reflect on personal strengths and limitations to identify learning required to improve and adapt professional practice
- c. Seek input from others to confirm learning needs of self and others to deliver improved client outcomes
- d. Plan and implement steps to address professional development needs

4 Radiation safety and risk management

4.1 Implement safe radiation practice appropriate to their division of registration

- a. Demonstrate understanding of state and federal radiation safety legislation, radiation safety guidelines and international best practice for radiation management
- b. Apply principles of risk management relevant to radiation
- c. Identify radiation risks and related risk control systems and procedures
- d. Identify and apply safe radiation practice

4.2 Protect and enhance patient/client safety

- a. Follow patient/client identification procedures to confirm the correct match of patient with intended procedure
- b. Review, communicate, record and manage client/patient information accurately, consistent with protocols, procedures and legislative requirements for maintaining patient/client records
- c. Identify and manage risks associated with patient/client transfers

- d. Identify and manage risk of infection, including during aseptic procedures
- 4.3 Confirm and operate equipment and instrumentation safely and appropriate to their division of registration
 - a. Apply knowledge of equipment and instrumentation to confirm that it is in good order and operating within acceptable operating parameters
 - b. Identify and take action to correct unacceptable condition or operation of equipment and instrumentation
 - c. Follow protocols to record and report non-conformance of equipment
- 4.4 Maintain safety of self and others in the work environment appropriate to their division of registration
 - a. Demonstrate knowledge of legal responsibilities for health and safety of self and others
 - b. Identify safety hazards in the workplace and apply knowledge of responsibilities for notification
 - c. Identify, confirm and implement methods of radiation management
 - d. Apply knowledge of interactions with matter, early and late effects and stochastic and deterministic effects of radiation exposure
 - e. Identify occupancy risks related to proximity of radiation and radioactive storage
 - f. Provide information on radiation-related hazards and control measures to others in the workplace
 - g. Use appropriate personal protective clothing and equipment
- 4.5 Safely manage radiation and radioactivity in the environment
 - a. Apply knowledge of the environmental risks of manufactured radiation and radioactivity
 - b. Identify safe and legal methods of handling, storage and disposal including understanding of shielding requirements
 - c. Implement protocols and procedures in response to radiation and radioactivity incidents
 - d. Report incidents in accordance with protocols, procedures and legal requirements

5 Practice in medical radiation sciences

- 5.1 Apply their understanding of anatomy, physiology and pathology appropriate to their division of registration
 - a. Demonstrate understanding of the radiographic anatomy and physiology of the human body
 - b. Demonstrate understanding of the scientific explanations underpinning disease and injuries affecting the human body
 - c. Identify anatomical structures, injuries and diseases of the human body in planar and sectional images
- 5.2 Apply principles of medical radiation physics and instrumentation
 - a. Demonstrate understanding of principles of medical radiation physics and instrumentation
 - b. Demonstrate knowledge of the instrumentation of modalities as used in each division of registration
 - c. Apply principles of medical radiation physics to demonstrate how changes in physical parameters impact on patient clinical outcomes
 - d. Demonstrate use of instrumentation and laboratory procedures appropriate to the division of registration
- 5.3 Use patient information management systems appropriately

- a. Demonstrate knowledge of legislative responsibilities relating to ownership, storage, retention and destruction of client/patient records and other practice documentation
 - b. Demonstrate knowledge of patient information management systems
 - c. Ensure correct verification and management of information applicable to the division of registration.
- 5.4 Confirm the procedure according to clinical indicators
- a. Review the patient/client's clinical history, referral and current medical information to confirm the requested procedure is appropriate
 - b. Determine the appropriate imaging and/or treatment protocols and priorities, which considers the information collected during the initial interaction with the patient/client and knowledge of imaging and/or treatment options
 - c. Adapt the requested examination to an individual patient/client considering available clinical information
- 5.5 Assess the patient/ client's capacity to receive care
- a. Identify factors or conditions that may affect the patient/client's behaviour and/or capacity to undergo the procedure
 - b. Demonstrate understanding of patient/client preparation requirements
 - c. Identify patients/clients most at risk; including pregnant women and the foetus; breastfeeding mothers and their children
 - d. Identify contraindications and limitations of medical radiation services; determine appropriate adjustments to procedures; and communicate these to the patient/client
 - e. Perform patient/client assessment and medical radiation interventions in accordance with legislation, registration standards, codes and guidelines, including gaining informed consent
- 5.6 Deliver patient/client care appropriate to their division of registration
- a. Apply knowledge of radiation biology and radiation dose adjustment to deliver safe and effective client/patient outcomes
 - b. Identify and respond to a patient/client's deteriorating condition, or inability to undergo a procedure or treatment, consistent with duty of care and statutory requirements
 - c. Apply knowledge of responsibilities for conveying information when significant findings are identified
- 5.7 Manage and manipulate 3D datasets for diagnostic image production
- a. Demonstrate understanding of how 3D datasets are generated
 - b. Apply knowledge of the use of 3D images for optimal diagnostic or therapy outcomes to confirm that appropriate data is obtained
- 5.8 Apply knowledge of pharmaceuticals relevant to their division of registration
- a. Demonstrate understanding of the principles and applications of pharmaceuticals
 - b. Demonstrate understanding of the risks, precautions and contraindications of pharmaceutical use
 - c. Apply knowledge of pharmacokinetics, pharmacodynamics and the potential range of reactions to drugs or agents relevant to their division of registration
 - d. Follow procedures to ensure delivery of correct pharmaceuticals to patients/ clients

5A Practice in diagnostic radiography (some standards are listed where they are employed in the nuclear medicine specialisation)

5A.3 Implement diagnostic computed tomography (CT) imaging

- a. Demonstrate understanding of the use, design and operation of CT systems

- b. Demonstrate understanding of imaging parameters and scan protocols based on the range of patient presentations
 - c. Perform and evaluate unenhanced and contrast CT examinations of the body and, when appropriate, modify them to take into account patient/client presentation and clinical indications
 - d. Apply knowledge of post-processing techniques, including multi-planar reformats and volume imaging
- 5A.5 Explain the principles and clinical applications of magnetic resonance (MR) imaging
- a. Demonstrate understanding of MR image production, including the hazards associated with MR imaging
 - b. Demonstrate understanding of the clinical context for MR examinations
 - c. Describe protocols applicable to MR examinations in adult patient/clients
- 5A.6 Explain the principles and clinical applications of ultrasound imaging
- a. Demonstrate understanding of the physics of ultrasound image production
 - b. Demonstrate understanding of the clinical context for ultrasound imaging and ultrasound examinations

5B Practice in nuclear medicine

- 5B.1 Implement the preparation and assess purity of radiopharmaceuticals
- a. Perform the elution and quality control of a radioisotope generator
 - b. Assay the eluate and prepare radiopharmaceuticals ensuring critical procedure features are observed, such as correct volume
 - c. Perform quality control on radiopharmaceuticals and assess for patient/client use
- 5B.2 Explain the biodistribution and applications of radiopharmaceuticals including therapies
- a. Demonstrate understanding of biodistribution, including determining whether it is normal, altered or unexpected
- 5B.3 Implement routine nuclear medicine imaging
- a. Demonstrate understanding of standard nuclear medicine planar projections and their application to each body area
 - b. Demonstrate understanding of appropriate dosage of both isotope and CT for each patient/client
 - c. Perform SPECT/CT and PET/CT studies, including positioning the patient/client for the best diagnostic outcome
 - d. Evaluate nuclear medicine images and apply nuclear medicine quality criteria to these images
- 5B.4 Implement computed tomography (CT) imaging for nuclear medicine imaging
- a. Demonstrate understanding of the use, design and operation of CT systems
 - b. Demonstrate understanding of imaging parameters, scan protocols and relative dose levels based on the range of patient presentations
 - c. Perform and evaluate anatomical/attenuation correction CT scan
 - d. Apply knowledge of post-processing techniques, including multi-planar reformats and volume imaging
- 5B.5 Implement the delivery of nuclear medicine radioisotope examinations and therapies
- a. Calculate the dose and decay of radioisotopes used in examinations and therapies
 - b. Demonstrate understanding of the difference between therapeutic and diagnostic doses, as it affects the patient/client, health practitioner and the general public
 - c. Demonstrate understanding of the principles underpinning nuclear medicine therapies

- d. Apply patient/client preparation, care and aftercare, and delivery systems for nuclear medicine radioisotope therapies
 - e. Use appropriate dose delivery systems and safe, aseptic techniques
- 5B.6 Describe how to undertake in vivo and in vitro laboratory procedures
- a. Describe safe, aseptic blood-labelling procedures
 - b. Describe in vivo laboratory procedures
 - c. Demonstrate knowledge of methods to determine if results of laboratory procedures are normal, altered or unexpected

5C Practice in radiation therapy (not listed as not relevant for nuclear medicine)

**Supplemental Appendix B
CSU Graduate Learning Outcomes**

GLO	Domain (knowledge, skill, application)
Professional practice Demonstrate knowledge, capabilities, practices, attitudes, ethics and dispositions of their discipline or profession.	Identify and explain professionalism and professional responsibilities
	Demonstrate discipline-specific technical capabilities and self-appraisal required for a beginning practitioner or professional
	Exercise professionalism, initiative and judgement in decision making, actions and evaluation in professional practice at the level of a beginning practitioner or professional
Academic literacy and numeracy Demonstrate the literacy and numeracy skills necessary to understand and interpret information and communicate according to the context	Understand the use and structure of appropriate language in written, oral, visual, mathematical, and multi-modal communication
	Demonstrate the literacy and numeracy skills necessary to understand and interpret information and communicate effectively according to the context
	Consider the context, purpose, and audience when gathering, interpreting, constructing, and presenting information
Information and research literacies. Demonstrate capability as inquirers to locate, evaluate, manage, and use information and research to develop and guide their own knowledge, learning, and practice	Demonstrate that disciplinary knowledge is developed through research and evidence
	Demonstrate the skills required to locate, access and critically evaluate existing information and data
	Synthesize and apply information and data to different contexts to facilitate planning, problem solving and decision making
Digital literacies. Critically harness digital literacy for professional practice and research and demonstrate digital citizenship in online learning, professional and social communities	Understand professional, social and cultural implications of the global use of technology
	Use, create, communicate and share multimodal information in digital environments
	Ethically, legally, safely and critically use technology to select, create and share information and participate in online learning, professional and social communities
Ethics. Exhibit ethical decision making and reasoning to identify creative solutions to ethical problems	Understand ethical approaches such as rights, utilitarianism and virtue ethics and the need for moral awareness and reflection on moral values
	Critically reflect on, discuss and challenge the values intrinsic in the different practices in which they participate
	Form judgements and apply ethical decision making and reasoning to identify creative solutions to ethical problems
Lifelong learning. Critically appraise and continue to develop personal and professional capabilities	Anticipate lifelong learning requirements post-graduation
	Seek and employ feedback to reflect on performance and outcomes in order to develop as an individual and professional
	Reflect on personal capabilities and develop habits of self-directed learning that will extend beyond student life

Indigenous cultural competence. Practise in ways that show a commitment to social justice and the processes of reconciliation based on understanding the culture, experiences, histories and contemporary issues of Indigenous Australian communities	Understand specific cultural and historical patterns that have structured Indigenous lives in the past and the ways in which these patterns continue to be expressed in contemporary Australia
	Critically examine personal power, privilege and profession within the broader context of the history, assumptions and characteristics that structure Australian society, and the way those factors shape historical and contemporary engagement with Indigenous communities and Indigenous people
	Practise in ways that show a commitment to social justice and the processes of reconciliation through inclusive practices and citizenship
Global citizenship. Use their understanding of diversity and the 'common good' to work constructively, respectfully and effectively with local and global communities and workplaces	Understand the impact of culture and global issues on professional practice
	Demonstrate the skills to appropriately interact with people from a range of cultural, linguistic and religious backgrounds
	Use the qualities and behaviours of a professional global citizen to work effectively in trans-cultural contexts.
Sustainable practices. Engage with ethical and sustainable practices that meet the needs of the present without compromising the ability of future generations to meet their own needs and those of the environment	Demonstrate a multidisciplinary knowledge that empowers graduates to understand and critically analyse the challenges of balancing the social, economic and environmental factors essential for ecological sustainability
	Apply acquired sustainability knowledge individually and collectively for the improvement of local and global environmental sustainability
	Demonstrate attitudes and implement actions that meet the needs of the present without compromising the ability of future generations to meet their own needs and those of the environment