

Master of Engineering (Electrical Systems)

Mapping of Program Learning Outcomes with Graduate Attributes and Engineers Australia Stage-1 Competencies for Professional Engineers

EA Stage 1 Competencies - Professional Engineer	Program Learning Outcomes	MEng Graduate Attributes
Knowledge and Skill Base		
PE 1.1 Comprehensive, theory-based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the engineering discipline.	1. Demonstrate sound fundamental understanding of the scientific and engineering principles and apply underpinning natural, physical and engineering sciences, mathematics, statistics, computer and information sciences to solve problems in electrical systems engineering.	GA1.1 Demonstrate competence in mathematics, natural sciences and engineering fundamentals.
PE 1.2 Conceptual understanding of the, mathematics, numerical analysis, statistics, and computer and information sciences which underpin the engineering discipline.		GA 1.4 Use numerical analysis, statistics, computer and information technology to develop solutions.
PE 1.3 In-depth understanding of specialist bodies of knowledge within the engineering discipline.	2. Apply in-depth as well as broad understanding of the relevant specialist body of knowledge within the electrical systems engineering discipline including: fundamental power generation and power system design principles; evaluation power system safety and protection; assessing smart grids; power stability and operational analysis; substation automation and systematic project management.	GA 1.2 Possess specialised engineering knowledge appropriate to the discipline.
PE 1.4 Discernment of knowledge development within the engineering discipline.	3. Reflect critically on a broad body of engineering knowledge to plan and execute an electrical systems engineering research based project, with awareness to knowledge development and research direction within the engineering discipline.	GA 4.2 Independent self-directed learner with ability to evaluate and synthesise the research and professional literature in their specialised area of engineering
PE 1.5 Knowledge of engineering design practice and contextual factors impacting the engineering discipline.	4. Draw on the knowledge of engineering design practice and understand the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the electrical systems engineering discipline.	GA 4.3 Recognise the impact of engineering within the broader industry and community interest.
PE 1.6 Understanding of the scope, principles, norms, accountabilities and bounds of contemporary engineering practice in the specific discipline.		GA 2.2 Apply reflective practice to social, economic, global, cultural and environmental factors to device sustainable engineering solution

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Engineering Application Ability

PE 2.1 Application of established engineering methods to complex engineering problem solving.

PE 2.2 Fluent application of engineering techniques, tools and resources.

PE 2.3 Application of systematic synthesis and design processes.

PE 2.4 Application of systematic approaches to the conduct and management of engineering projects.

5. Apply systematic approaches, design processes and established engineering methods, tools, techniques and resources, underpinned by hazard and risk framework considerations to conduct and manage electrical systems engineering projects.

GA 2.1 Effective problem solvers, who apply creativity and critical thinking to problem solving.

GA 1.3 Use discipline specific techniques, resources and engineering tools.

GA 3.3 Use systemic engineering synthesis and design processes.

GA 3.1 Identify, define, devise and execute a plan to conduct and manage engineering projects.

Professional and Personal Attributes

PE 3.2 Effective oral and written communication in professional and lay domains.

PE 3.3 Creative, innovative and pro-active demeanour.

PE 3.4 Professional use and management of information.

PE 3.5 Orderly management of self and professional conduct.

PE 3.6 Effective team membership and team leadership

PE 3.1 Ethical conduct and professional accountability.

6. Communicate effectively technical ideas, design concepts or research results to a diverse audience.

7. Ability to recognise and pro-actively engage in ongoing professional development and lifelong learning, as well as develop creative and innovative solutions to engineering problems.

8. Demonstrate professional use and management of information.

9. Apply discipline and professional knowledge and skills to demonstrate autonomy, adaptability and responsibility as a professional engineer.

10. Ability to work as a member of a cross disciplinary team in a manner consistent with ethical and professional standards.

GA 5.1 Identify and credibly communicate engineering and general knowledge.

GA 3.2 Proactive, creative and innovative in defining engineering problems within a wider global context.

GA 5.2 Demonstrate professional use and management of information

GA 4.1 Resilient, flexible and self-aware individual who can develop strategy to identify and address gaps in knowledge and professional practice.

GA 5.3 Develop effective team membership and leadership and work collaboratively in a positive manner to achieve common goals.

GA 4.4 Act ethically and demonstrate professionalism, individual accountability and social responsibility.