SYSTEMS ENGINEER

ALSO KNOWN AS: SYSTEMS INTEGRATION ENGINEER | SYSTEMS ARCHITECT | COMPLEX SYSTEMS DESIGNER | ENGINEERING SYSTEMS SPECIALIST | TECHNICAL SYSTEMS ANALYST

BECOME THE ARCHITECT OF TECHNOLOGICAL INNOVATION.

As a Systems Engineer, you'll design and integrate the backbone of complex technological ecosystems. This role melds analytical prowess with a holistic approach, ensuring intricate systems function seamlessly across various industries and applications.

KEY SKILLS

Skills which may benefit anyone considering a job as a systems engineer include:

- Communication
- Problem solving
- Project management
- Systems thinking
- Technical expertise

VALUES & ATTRIBUTES

Values and attributes of anyone considering a job as a systems engineer include:

- Analytical
- Attention to detail
- Adaptable
- Collaborative
- Innovative
- Artistic – "Creator"

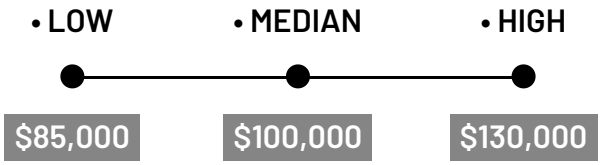
CAREER PROGRESSION

In this role, you may have the opportunity to progress to other positions. Career progression opportunities include:

- Mechanical Engineer
- Mechatronics Engineer
- Mechanical Engineering Supervisor
- Artificial Intelligence Engineer

SALARY EXPECTATION

The expected salary for a Systems Engineer can vary across different areas of manufacturing and may vary as you become more experienced.



RELATED INDUSTRIES

▸ Aerospace and Defence ▸ Chemicals, Hydrocarbons and Refining ▸ Food and Beverage ▸ Furniture and Other Products ▸ General Manufacturing and Engineering ▸ Meat and Seafood Processing ▸ Pharmaceutical and Medical Technology ▸ Polymers, Plastic and Rubber ▸ Printing and Graphic arts ▸ Pulp, Paper and Packaging ▸ Renewables ▸ Textiles, Clothing and Footwear ▸ Timber and Wood ▸ Transport Equipment and Machinery

RECOMMENDED SCHOOL SUBJECTS

- Chemistry
- Design
- Engineering
- Engineering Skills
- Mathematical Methods
- Physics

CORE SCHOOL SUBJECTS

- General Mathematics
- Essential English
- Information and Communication Technology
- Digital Solutions

JOB OVERVIEW

Systems Engineers play a crucial role in developing and managing complex systems across multiple industries. They are responsible for overseeing the entire lifecycle of a system, from conceptualisation and design to implementation and maintenance. Their work involves integrating various subsystems and components to create efficient, reliable, and scalable solutions that meet specific organisational or client needs.

These professionals utilise a range of engineering principles, software tools, and analytical methods to design and optimise systems. They need a combination of technical expertise, project management skills, and a broad understanding of different engineering disciplines. A typical day might involve analysing system requirements, developing system architectures, coordinating with cross-functional teams, troubleshooting integration issues, and ensuring that systems meet performance, reliability, and security standards.

Systems Engineers often work on large-scale projects in industries such as aerospace, defence, telecommunications, healthcare, and information technology. They collaborate closely with stakeholders, including clients, other engineers, and management, to ensure that systems align with business objectives and technical specifications. Their role is dynamic, requiring continuous learning to keep pace with technological advancements and evolving industry standards.

WHAT WILL YOU DO?

Your role may include duties as follows:

1. Design and develop complex systems architectures
2. Analyse and define system requirements and specifications
3. Integrate various subsystems and components into a cohesive whole
4. Conduct system testing, validation, and performance optimisation
5. Manage the entire system lifecycle, from conception to decommissioning

HOW TO BECOME A SYSTEMS ENGINEER

Becoming a Systems Engineer typically requires a strong educational background and relevant experience. Here are the steps to pursue this career:

1. Obtain a bachelor's degree in systems engineering, computer science, or a related engineering field
2. Gain experience in system design, integration, and project management
3. Develop proficiency in relevant software tools and programming languages
4. Explore certifications and membership through Systems Engineering Society of Australia (SESA)
5. Consider advanced degrees like a master's in systems engineering for career progression

VOCATIONAL EDUCATION & TRAINING

While Systems Engineering roles typically require university-level education, some vocational courses can provide foundational knowledge and skills. Some Systems Engineers start with a trade qualification in mechanical engineering. Relevant VET qualifications include:

- Advanced Diploma of Engineering (MEM60122)
- Advanced Diploma of Engineering – Planning (MEM60322)
- Diploma of Information Technology with relevant specialisation (ICT50220)
- Diploma of Applied Technologies (MEM50822)

UNIVERSITY & HIGHER EDUCATION

A university degree is essential for most Systems Engineering positions. Relevant bachelor's degrees include Systems Engineering, Electrical Engineering, Computer Science, or Mechatronics Engineering. Many universities also offer specialised master's programs in Systems Engineering.

These programs typically cover advanced topics such as systems modelling, requirements engineering, system architecture, and project management. Graduates develop critical thinking and analytical skills crucial for designing and managing complex systems. Some universities offer courses in specific domains like aerospace systems or biomedical systems, allowing students to specialise in particular industries. Postgraduate studies can enhance career prospects and lead to roles in systems architecture or technical leadership.