Bachelor of Engineering in:
Mechanical Engineering
Mechatronic Engineering
Double Degrees
Mechanical Engineering with Commerce

scieng.curtin.edu.au
Mechanical engineering involves the conception, design, manufacture, control, maintenance and management of any system in which motion is a key feature. The range of mechanical engineering examples is vast, from tiny micro-mechanical devices to massive power generating turbines. The flight and performance of modern aircraft is also largely an accomplishment of mechanical engineering.

Work in the mechanical engineering field includes the design and specification of components or entire systems, design and planning of manufacturing processes, plant operation and maintenance, consulting, research and development, and management. These tasks are common to a wide range of industries such as power generation, mining, mineral processing, transport, and water supply, making career opportunities almost endless.

Mechatronics is one of the most recent developments in engineering, combining the problem-solving and design skills of the mechanical engineer with expertise in digital electronics. These skills are used to produce “smart” products or to advance industrial production through automation and the use of robotics.

Mechatronic engineers produce consumer products such as cameras, video recorders, CD players and anti-skid braking and engine management systems on motor vehicles. Industrial automation is another outlet for mechatronic engineering where robots and computer-controlled machines replace the role of the human in the manufacturing process. This has led to increased productivity and quality assurance. Recently mechatronics has started to impact areas such as health care, agriculture, underwater exploration, alternative power generation and transportation.

Good Reasons to Study Mechanical and Mechatronic Engineering
- Curtin’s engineering degrees focus on developing your fundamental knowledge and practical skills necessary for a wide range of career opportunities in the engineering industry including management, and research and development.
- Our degrees maintain a balance between theoretical skills and practical experience with up to date facilities for demonstrating concepts and their applications.
- You will learn from highly qualified, enthusiastic and caring teaching staff with both international academic experience and industry exposure.
- You will study a subject that will make a positive difference to the way people live.
- Mechanical engineers work on projects that help people with disabilities, ensure safety, and make our every day lives easier.
- You will work on projects such as creating animated puppets and participate in robot war competitions.
- You will work in a multidisciplinary field. You can liaise with various professionals in a wide range of industry environments such as animartrons, manufacturing, rehabilitative technology or modern automotive.
- At Curtin you will work with the latest in technology. Mechanical engineers are employed in technology dependent industries such as space exploration, nanotechnology and the health industry.
- You can have a positive impact on the environment. Industrial pollution is a growing problem in the world and mechanical engineers seek ways to address this. For example, the development of more efficient energy generation, lower emission vehicles and alternate fuel engines.

Double Degree Programs
Completing a double degree program leads to a wider range of career opportunities in a variety of industries. They also provide you with increased knowledge across a larger area making it easier for you to find a job on graduation.

Mechanical Engineering with Commerce
This double degree course is designed to prepare students who graduate as engineers with a strong background in commerce. This will enhance your future opportunities as an engineering manager in public or private organisations.

Engineering First Year Studio
All Curtin Engineering courses include a common first year of study providing you with solid theoretical and practical experience in a wide range of disciplines. Curtin has established an Engineering First Year Studio designed to reflect a range of engineering professions and to support your transition into university study.

The studio facilities include:
- Open plan design offices
- Large lecture theatres
- Learning assistance clinics
- Computation, Electrical and Mechanics laboratories

Curtin’s First Year program was awarded the prestigious Carrick Award for First Year Experience in 2006 placing Curtin as a leader in Australian engineering education.
Curtin’s Mechanical Engineering degree delivers the fundamental knowledge and practical skills necessary for graduates to practice as professional engineers or pursue positions within the fields of academia, research and development, and management. This course includes study areas of thermal and fluid sciences, applied mechanics and control, material science, design and manufacturing, industrial technology and management.

In fourth year, you have the opportunity to select from a number of subject options, tailoring your degree to suit your interests. You will also undertake a project where you will apply and integrate the diverse range of skills you have gained during your course. The project serves as a valuable introduction to working as an engineer.

Where do Mechanical Engineering Graduates Work?

• Energy production – Thermal power generation, heat and fluid flow systems, steam and gas turbines, refrigeration and air conditioning, electronic cooling systems and combustion.

• Transportation – Mechanical engineers are involved in the design and development of mechanical systems for space aircraft, planes and ships, including cargo handling and conveyor techniques.

• Material science – The application of advances in materials science in the development of new bearings systems, new gear and drive systems are aspects of mechanical engineering. Maintenance management and risk management are test further areas in which mechanical engineers specialise.

• Tool production – Mechanical engineers produce tools for industry such as computer controlled lathes, milling machines, grinding machines and other precision machinery.

• Prototype development – Using technologies such as Rapid Prototyping (RP) and Fastform Fabrication (FFF) mechanical engineers manufacture prototypes to be used to test the form, fit and function of a design prior to commencing full-scale manufacture.

• Micromachines – Future developments include the manufacture of micro-machinery and nanofabrication.

While being experts in their own field, mechanical engineers must understand the relationships between the different technical disciplines, with an emphasis on design, communication and teamwork. At Curtin, you will complete the Engineering Foundation Year (EFY), a common first year study program which builds on fundamental concepts common to all areas of engineering.

The Mechatronic Engineering degree at Curtin incorporates both theoretical knowledge and practical skills. Throughout second and third year, you will develop fundamental knowledge in areas such as mechatronic technologies and design methods. During fourth year, you will complete a major mechatronic project that is either research based or a mechatronic design problem. The design projects are often completed in collaboration with a local engineering company.

Where do Mechatronic Engineering Graduates Work?

• Automation machinery – Mechatronics involves the design and development of machinery for the automation of industrial tasks, such as for material, component and finished goods transfer in the mechanical, electrical, electronics and chemical industries.

• Small scale companies – Many small engineering companies cannot afford to use mechanical, electrical or electronics engineers and employ mechatronic engineers who have skills in all of these areas.

• Innovative machinery – Mechatronic engineers research, design and develop machinery for underwater exploration, mining and forestry, and where the employment of human labour is often dangerous and possibly a health risk.

• Product development – Large companies employ mechatronic engineers to help in the designing and manufacturing of modern consumer products.

• Consultancy – Mechatronic engineers complete studies on the feasibility, cost implications and performance benefits of new mechatronic machinery for clients.

• Mechatronic equipment – Mechatronic engineers manage the design, construction, installation and maintenance of mechatronic equipment.
Entry Requirements

Local Students
Selection is based primarily on Tertiary Entrance Rank (TER). Applicants must meet the standard admission requirements of the University as well as at least three of the following courses: Mathematics 3C/3D, Mathematics: Specialist 3C/3D, Physics 3A/3B and Chemistry 3A/3B.

More Information
www.prospective.curtin.edu.au

International Students
Minimum university entry requirements for international students are available from www.international.curtin.edu.au
Applicants must demonstrate appropriate high school leaving results in the following areas: Advanced Mathematics, Physics and preferably Chemistry.

More Information
www.international.curtin.edu.au

Honours
Honours are awarded to students whose academic performance exceeds a given level throughout their undergraduate degree program. Students may graduate with first class, upper second class or lower second class honours. Honours degrees enhance employment prospects and are essential for students wishing to continue on to postgraduate studies.

Further Study Options
- Master of Engineering Management is a course designed for engineers with one or more years of experience. Taught with Curtin Business School, the degree provides a practical balance between engineering and business skills.
- All of Curtin’s Engineering departments have postgraduate engineering courses which give graduate engineers the opportunity to crossover into new areas or further develop research in their chosen stream.

Current Mechanical Engineering Research at Curtin
On completion of a BEng (Mechanical Engineering) program students with suitable grades are able to undertake further studies by research. Some of the current areas of research include:
- Materials
- Vibration and Noise
- Mechatronics/Robotics
- Modular and Industrial Automation
- Appropriate Technology
- Biomechanics
- Flow-Structure Interaction
- Fluid Dynamics
- Heat Transfer

Women in Engineering
Many opportunities exist for diversity in the engineering profession. Employers value the contribution of women and actively seek to employ female engineers. Curtin’s Women in Computing and Engineering Project raises awareness of opportunities for prospective female students and ensures that female computing and engineering students experience a supportive learning environment at Curtin.

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Full details of units and course structure can be obtained by contacting the above or electronically from http://handbook.curtin.edu.au

“Curtin is a great place to learn. The units are interesting and challenging, and the quality of teaching is unmatched.”

The concept of designing huge machines to create masses of energy is fascinating. The thought of doing that every day and calling it ‘work’ is a very exciting endeavour.
From the smallest bolt to the largest power plant, mechanical engineers design it all. Imagine drawing up plans for enormous generators and massive turbines the size of a building and a year later walking through that exact construction, down to every last screw and just thinking, “Yep, I designed this baby myself!”

Professional Recognition
Engineers Australia
Curtin’s Bachelor of Engineering has received full recognition by Engineers Australia which means graduates are exempt from all additional academic requirements for Corporate Membership. To qualify for Corporate Membership you need a minimum of four years experience after graduation. Graduates accredited by Engineers Australia receive similar privileges from equivalent professional institutions overseas.
www.engineersaustralia.org.au

Curtinnovation
Curtin aspires to be a leading edge university of technology. To fulfil this vision, we strive to be innovative and forward looking in everything we do. It's in our approach to teaching and learning, it's in our research, it's in our staff, it's in our students, it's in our graduates. It's in the way we think and act. It's what we call Curtinnovation.