A CHOOSEN CAREER IN MECHANICAL ENGINEERING
CAREERS CENTRE
INTRODUCTION

The Curtin Careers Centre, working closely with employers and the university community, sources, develops and delivers career development programs and resources. The purpose of these professional and personal development learning opportunities is to facilitate successful career transitions; especially study to employment and further study and to enhance students’ ability to develop lifelong skills in managing their careers. The Careers Centre also provides accurate, current authoritative labour market and graduate recruitment information focusing on society’s needs and aspirations.

The Careers Centre team has written a series of occupation career booklets to enable tertiary students to consider their chosen field in more depth including information on the current labour market, associated professional associations, pertinent job seeking avenues and samples of relevant and related positions.

Whilst students are actively seeking information about a particular field they need also be aware of recruitment and selection methods and the need to develop strategies to be competitive in their field at graduate entry level.

Self-assessment is an essential component of job seeking i.e. a student needs to be fully aware of their interests, skills, attributes and capabilities to be able to convey this on paper (job application documents) and in person (networking/interviewing/promotion).

The purpose of this occupational booklet is twofold. It will assist students to develop knowledge of trends in employment and current opportunities and to identify existing skills and attributes required to successfully pursue a career in this field.

A student may not be aware that whilst using this resource that they are involved in Career Development Learning (CDL). CDL assists students to develop Self Awareness, to Identify Opportunities, to learn how to Make Decisions, to Manage Transition from university and incorporate Lifelong Learning.

This involves Curtin students working with the Curtin Careers Centre towards the attainment of required skills and knowledge at a tertiary level to successfully manage the changing contexts of life; incorporating:

• Personal Management
• Learning and Work Exploration
• Career Building

The Careers Centre hopes you find this a useful resource.
A CHOSEN CAREER IN MECHANICAL ENGINEERING

Mechanical engineering is a part of nearly all areas of engineering. The main issue as an engineering graduate is deciding where you would like to go. A mechanical engineer is involved in the development and use of new materials and technologies, especially computer-aided engineering as well as the management of people and resources.

According to the University of Adelaide (2010), a rapidly growing field for mechanical engineers is environmental control, which is the development of machines and processes that will produce fewer pollutants, as well as the development of new equipment and techniques to reduce or remove existing pollution.

Mechanical engineers can work on a variety of small and large projects, working along and in large teams and liaising with people from a variety of fields. Modern mechanical engineers continue to develop and apply new knowledge and technology to improve the quality of life for society as a whole.

WHAT AM I QUALIFIED FOR?

As a Curtin University of Technology student you will have developed a number of employability skills and attributes that maybe you have not thought of or recognised in your self. In fact, all Curtin University courses are designed to ensure you are given ample opportunity to develop Curtin Graduate Attributes. These attributes are defined as qualities, skills and understandings that Curtin students develop during their time at the university. They are designed to go beyond the disciplinary specific expertise or technical knowledge you gain at university. According to the Graduate Attributes, Curtin graduates show evidence that they can:

- Apply discipline knowledge, principles and concepts
- Think critically, creatively and reflectively
- Access, evaluate and synthesise information
- Communicate effectively
- Use technologies appropriately
- Utilise lifelong learning skills
- Recognise and apply international perspectives
- Demonstrate intercultural awareness and understanding
- Apply professional skills

Combine these attributes with existing skills gained from life and work experiences and you will start to form a solid picture of what you are capable of. If you are having difficulty with outlining your skills or recording your achievements logon to Resume Express from Jobs and Events Connect – Job Applications – Resumes - Module

Analyse Your Skills, attend a workshop at the Careers Centre or contact careers@curtin.edu.au to make an appointment to see a Careers Consultant.
OCCUPATIONAL ROLES

There are many areas a graduate in mechanical engineering can go. It is up to you to decide your direction.

Mechanical Engineers are employed in many fields. According to Curtin’s School of Engineering, (2010), some of these are:

ENERGY PRODUCTION
This includes thermal power, heat and fluid flow systems, turbines, refrigeration, cooling systems and combustion.

MATERIALS
This is the application of materials science in the development of bearing systems, new gear and drive systems and risk management.

TOOL PRODUCTION
This is the production of tools for industry. These include grinding machines, milling machines, computer controlled lathes and precision machinery.

PROTOTYPE DEVELOPMENT
This is the use of rapid prototyping and freeform fabrication. Mechanical engineers manufacture prototypes to test forms, fit and determine function of a design prior to manufacture.

MIRCOMACHINES
These are manufacturing of future developments which includes micromachinery and nanofabrication.

MANUFACTURING SYSTEMS ENGINEERING:
Is processes and systems that are used to complete tasks accurately, changing raw materials into products with the smallest wastage.

HYDRAULICS
Involves the design of applying fluid control, so that machinery can operate smoothly and effectively with the least amount of pressure.

PNEUMATICS
Refers to the use of air pressure to control machinery. It is a cleaner and safe way to run machines.

THERMODYNAMICS
Is the use of heat energy and the transfer to energy to machinery.

Other areas are:
- Transportation
- Automation
- Innovation
- Product Development
- Consultancy
- Mechatronic Equipment
- Aeronautics
- Marine
- Research and
- Defence

When hired in mechanical engineering, many companies call their employees by a variety of job titles. Other than Mechanical Engineer, look out for some of these:
- Mechanical design engineer
- Production engineer
- Mechanical Drafter
- Plant Engineer

Traditionally, there are 3 types of employment a graduate can go after completing a graduate program. You may be referred to as a Site Engineer, Project Engineer and then to Principal or Senior Engineer.
OCCUPATIONS AND ROLES

LABOUR MARKET INFORMATION

The Department of Employment and Workplace Relations (DEWR) and Engineers Australia report that there are currently skills shortages in this profession, and there are signs the shortage may be intensifying. Shortages are likely to be most intense in QLD and WA.

According to Graduate Careers Australia, in 2005 mechanical engineering graduates had an employment rate of 89.5%. In Australian jobs 2007 the DEWR reports that job prospects for mechanical engineers are average. Unemployment in this occupation is currently low but the predicted outlook is that the job market to 2011–12 may decline.

In addition, The Association of Professional Engineers, Scientists and Managers, Australia’s (APESMA) 2010 Graduate engineer employment survey report, the average starting salary for a graduate mechanical engineer in 2009 was $66,300 and reveals that the average annual salary across this discipline increased by 5.96% in 2011. Experienced mechanical engineers may earn in excess of $160,000.

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Median Base Salary by Industry and Responsibility Level (APESMA Professional Engineer Remuneration Survey Report, June 2010)

Working in the private sector brings with it many rewards. APESMA highlights the financial benefits.
GRADUATE PROGRAMS AND ASSOCIATIONS

GRADUATE AND VACATION WORK

Graduate programs are available to final year students and recent graduates. Applications can open as early as February/March of each year. Programs can be from one year to three years in duration, depending on the discipline. Graduate Programs generally offer training and development, job rotation through various departments of the organisation, challenging roles, mentoring, and social and networking opportunities.

Vacation programs are available to penultimate and final year students and can be offered in either Winter or Summer. Winter programs will be approximately four weeks in duration and summer programs can be up to twelve weeks. Vacation programs offer paid positions pertinent to your discipline, the application of theory to the workplace and may also lead to selection for a Graduate Program. Applications are generally open in Semester I for Winter Vacation Programs and this can tie in with the advertising of the Graduate Programs. Summer programs are often advertised mid-year, June to August.

Both public and private sector employers target final year students from all disciplines. Have a look at what they have to offer.


Note: You may not wish to apply for a Graduate Program but the position descriptions will give a good indicator of what type of graduate and graduate skills/attributes employers are seeking from prospective candidates. If you believe that you meet this type of criteria, it is likely that you are already in the professional employability stakes. If not, then you know what you have to do leading up to your graduation - increase your employability stakes.

Some companies that have Graduate Programs are:

GRD Minproc
http://www.minproc.aom

Newcrest Mining
http://www.newcrest.com.au

Woodside
http://www.woodside.com.au

Xstrata
http://www.xstratacoal.com

PROFESSIONAL DEVELOPMENT AND ASSOCIATIONS

Join your Professional Association(s) This allows you to keep abreast of trends and developments in your field and to check any employment and networking opportunities.

Professional Associations often have career sections and online job boards. Some information may only be accessible to members and most associations allow for student membership at reduced fees. There may also be opportunities to get involved at branch level or to volunteer.

Professional associations often organise events, seminars and social functions to assist their members to keep abreast of current issues and practices. For people attempting to enter a field or profession, they can be a good source of contacts and information about an industry!

Engineers Australia
http://www.engineersaustralia.org.au

Association of Professional Engineers, Scientists and Managers, Australia
http://www.apesma.asn.au

The Institution of Mechanical Engineers
http://www.imeche.org/
Set up a Desktop Folder and add a Favorite Internet Explorer folder.

Download jobs of interest for future reference. This allows you to keep a track of who is hiring in your field and the types of positions available.

NOTE: Don't just save the link as the details will disappear once the position has been filled. Copy the advertisement or any additional files onto Word and keep in your desktop folder. *This is also a useful tip for when you begin working in your field, keep an eye on pertinent positions at all times.

Look at positions available around the country and not just in Perth. This will give an idea of who is recruiting and where and differing salary scales.

Register with websites for specific job alerts

Consider search terms e.g. mechanical, production, plant, site etc. This will ensure that email alerts of appropriate jobs are sent directly to you. If positions on the job search websites give the name of the recruiting company – go directly to their website and check for other employment opportunities. Apply directly from the company website if possible.

GENERAL JOB SEARCH ENGINES
(all provide hits on the above search terms)

www.seek.com.au
www.careerone.com.au

Review job advertisements and job requirements – pay attention to the job description form (JDF) or job requirements and to the selection criteria.

NOTE: Selection criteria may be included in a JDF as for government jobs or may be 'hidden' in the advertisement. If no set selection criteria are asked to be addressed – target your letter to the position. Don't just limit yourself to reviewing entry level or graduate positions, look at the variety of positions in your field at various levels and view the requirements. This will let you discover what will be expected of you at higher levels and the type of experience that you will hope to gain at earlier stages in your career. Consider lifelong learning and developing your career.

SPECIFIC JOB SEARCH ENGINES

Check out appropriate organizations/companies in your field and look for Career or Employment pages. See the Careers Resource Officer for assistance if required.

Attend the Curtin Careers Festival (held semester one each year) and other career related events throughout the year to gain more information on the employers hiring graduates in your field. This information is also available online at www.careers.curtin.edu.au. You should be investigating individual employers throughout your studies to be able to identify those which you may wish to work for when you graduate.

Some examples of specific job search sites are:

Engineering Jobs Australia
http://www.engineeringjobs.net.au

Mechanical Engineer Jobs
http://www.mechanicaljobs.com.au

Engineering Jobs
http://www.invenio.com.au

THE JOB SEARCH & GETTING STARTED
WORK EXPERIENCE

Gaining work experience is essential to your career development. Here are some of the benefits:

• Insight on the working environment and relevant industries
• Development and acquisition of new skills
• Creates career networks and integration into the labour market
• An opportunity to demonstrate discipline knowledge, skills and abilities
• Highlights and informs career choices
• Professional grooming and development

By viewing position descriptions you will get a clear idea of what will be required in a specific role for a specific industry or field and you can start to address any skill shortages prior to completion of your studies. Employers look for students who are ‘all-rounders’. These are students who, whilst still performing well academically, can also demonstrate an interest in their chosen field beyond textbooks.

The Curtin Careers Centre has many services to assist you in finding a work placement. These are:

• Download the “How To” Guide for Gaining Work Experience to give you all the tips and hints you need to find a placement http://www.careers.curtin.edu.au/workexperienceprograms.html
• Attend a Work Experience Workshop conducted by the Careers Centre. Please see Jobs and Events Connect for a full schedule of upcoming workshops. http://www.careers.curtin.edu.au/studentlogin.html
• You can email us at careers@curtin.edu.au or phone (08) 9266 7802 to make an appointment.

No matter what type of work placement you are on accident insurance is essential. Accident insurance covers you if you hurt yourself on a work site. If a work experience opportunity is not paid the employer’s Personal Accident Insurance does not cover you. The Curtin Careers Centre provides students free appropriate accident cover.

ADDITIONAL RESOURCES

Research and Development: Research positions can often require Honours or a four year degree. If you have an interest in this area, keep an eye on university positions. Some universities allow for email alerts.

See www.australian-universities.com/list/ for access to all Australian Universities.

STILL CONFUSED?

If you are a current or recent Curtin graduate and you are still unclear about your career directions and the opportunities available for you please contact the Curtin Careers Centre for an individual career counselling session with a professional career development consultant. Just call reception on +61 8 9266 7802 to make an appointment.

If you are not a Curtin University Student or Alumni but would be interested in learning more about the courses at Curtin University please contact Future Students +61 8 9266 1000 (domestic students) or +61 8 9266 7331 (international students) or check out their website at www.futurestudents.curtin.edu.au
PRINCIPAL ENGINEER - MECHANICAL - MINERALS AND INDUSTRIAL

OVERVIEW:

This award winning design consultancy is a world leader in supplying engineering solutions and project management across a broad range of disciplines including the following:

- Building
- EWCI (Environment Waste Civil Infrastructure)
- Minerals and Industry
- Power and Energy
- Transport

For the past 50 years they have enjoyed success in WA and their minerals group has been a major part of this success. Their projects are typically associated with base materials processing, metals and chemical refining, crushing and screening, bulk materials handling, ports, rail and associated facilities.

THE OPPORTUNITY:

I am looking to speak with a Principle Professional Mechanical Engineer to provide leadership, design expertise and personnel management within the minerals group.

You will report directly to the mechanical business unit leader with your direct reports being predominantly minerals group engineers and designers, as well as maintaining relationships with other discipline principles, directors and PMs.

IS THIS YOU?

A Bachelor degree in Engineering with some 10-15 years experience in a heavy industry design practice
Design experience using software relevant to materials handling equipment in mining or mineral processing. This may include crushing, grinding, stacking or road rail loading and unloading

Excellent people skills and report writing ability

To be considered for this role you need to be eligible to live and work in Australia on a permanent basis and be eligible to become a member of Engineers Australia.
EXAMPLE POSITIONS

MECHANICAL ENGINEER (DESIGN)

Great opportunity to join the O&G industry

Design Focused

Opportunities for personal development

Our client is a leading marine and oil & gas contractor that provides a range of specialist subsea engineering services including well operation and decommissioning with innovative equipment.

As a result of their continued growth and success an exciting opportunity exits for an experienced and suitably qualified Mechanical Engineer to join their south of the river operations. Reporting to the Engineering Manager, your primary responsibility will be to carry out detailed design work in the development of new and innovative subsea well intervention equipment.

DUTIES INCLUDE:

Development of designs and under the direction of the Engineering Manager and Snr Mechanical Engineers.

Involvement in all phases of equipment development programs, including design build, test and commissioning.

Technical troubleshooting to provide workable solutions.

Detailed calculations and drawings.

To be considered for this opportunity you will possess a mechanical engineering degree. Current marine, oil & gas and / or subsea engineering experience is desirable but not essential.

You will have sound communications skills, be able to work within a dynamic team environment, you’re a quick learner and are self motivated, then you’re the candidate we’re chasing!

On offer for this permanent role will be an attractive remuneration package, the opportunity of joining a dynamic and innovative business in the oil & gas industry that will continue to develop you and provide ongoing career progression. Candidates with a design background in mining are encouraged to apply!
REFERENCES


Contacting the Careers Centre...

Feel free to visit us at Building 303
Email us at careers@curtin.edu.au
Give us a call on (08) 9266 7802
Or check out our website at www.careers.curtin.edu.au

Stay connected to the Careers Centre with Jobs and Events Connect. Access new jobs posted daily, workshop information, special events and employer presentations.

Explore • Connect • Grow