Position Description | Aro Tūranga
Department of Electrical and Computer Engineering

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

Embedded Systems Research Engineer

July 2018

Our Vision | Tirohanga Whānui

UC has a vision of people prepared to make a difference: *tangata tū, tangata ora.*

Our mission is to contribute to society through knowledge in chosen areas of endeavour by promoting a world-class learning environment known for attracting people with the greatest potential to make a difference.

We seek to be known as a university where knowledge is created, critiqued, disseminated and protected and where research, teaching and learning take place in ways that are inspirational and innovative.

UC aspires to provide all graduates with the opportunity to graduate:

- having mastered their chosen discipline
- employable, innovative and enterprising
- engaged with the community
- biculturally competent and confident
- globally aware.

College of Engineering | Te Rāngai Pūkaha

Globally connected, we will grow through our inspirational teaching and innovative research, and become one of the top 10 Engineering Colleges in the Southern Hemisphere by 2023

Electrical and Computer Engineering

The Department of Electrical and Computer Engineering is committed to excellence in teaching and research at the forefront of electrical and electronic, computer, and mechatronics engineering.

We aim to continually improve our teaching and our internationally recognised research programme by attracting and retaining highly-skilled academic and support staff, expanding our facilities, and providing service to the engineering profession and to the community at large.

The Role | Te Tūranga

The role of the Embedded Systems Research Engineer is to;

Apply specialist embedded systems and mechatronics knowledge and expertise to support high quality teaching and research teaching in the Department. This encompasses tutoring in the design and build of embedded and mechatronics systems, and software development support as part of the Department's teaching and research programmes, and management of the Automation Laboratory.

Key Relationships | Ngā Tino Hononga

Reporting Relationships

Responsible to: Head of Department

Reports to: Technical Services Manager

Responsible for: Nil

Functional Relationships

The Embedded Systems Research Engineer will develop and maintain positive relationships with the following:

Internal Relationships

Who does the job holder work or interact with inside the University	The purpose and frequency of these interactions is to:
Technical Services Manager	Weekly to discuss specific directions and priorities to ensure the goals and outcomes of the role are achieved.
Laboratory and workshop staff	Daily contact to meet the requirements of the role.
Technicians within the Department and other laboratory areas throughout the University	Regular contact with technical staff in the Department and within other University Departments to provide/seek professional opinion and share information.
Academic and General Staff within the Department	Daily contact responding to work requests, and to meet the requirements of the role.
Staff within the College and wider University	As required to meet the requirements of the role.

External Relationships

Who does the job holder work or interact with outside the University	The purpose and frequency of these interactions is to:
Undergraduate students	Daily instruction and supervison for Laboratory exercises as timetabeled during semester.
Postgraduate students	Daily technical and design guidance and assistance when approached to help research progress.
Suppliers and Contractors	Regularly to procure equipment/components/materials, and obtaining maintenance of equipment when needed.
Consulting engineers, Industry contacts, and other University researchers	Technical, design, and consultation assistance occasionally as required by managers.

Salary Range | Kaupeka Utu

This position is in Band 6.

Formal Delegations | Māngai Whakahaere

Human Resources

Has significant involvement in training/guiding staff within the organisation or manages large and complex projects, but without line management responsibility.

Financial – Budgetary and Expenditure Limits

In accordance with the Education Act 1989, the University Council and the Vice-Chancellor are able to delegate powers to delegates, who are authorised to take any action or sign any document (subject to any legal requirements and/or protocols of the University) within the authority of the delegation/s they hold. For financial transactions, individual delegation limits apply depending on each employee's role and seniority.

Budget Authority

- Authorised to spend from Manager's operating and capital budget to agreed delegation levels (spending may be by purchase order or purchasing card).

Contracts

- No authority to enter into revenue and expenditure contracts on behalf of the University.

Purchase Orders

- Authority to request purchase orders to the value agreed with the line manager for the role, notwithstanding the limitations inherent within the UC Delegations of Authority schedule.

Purchase Card (P-Card)

- Will be issued in line with UC Policy

Key Accountabilities | Kawenga Takohanga

Design and Development of Research Embedded and Mechatronic Systems

Outcome:

To design and build hardware, software, and mechatronic apparatus as required by staff, external clients and students to meet their research and teaching needs.

Key responsibilities include:

1. Liaise with staff, external clients and students to discuss research/teaching objectives and design ideas etc., in order to finalise a design and specifications.
2. Undertake research as required on the topic or project to be completed, including sourcing and costing components and other necessary materials.
3. Apply specialist mechatronics skills to develop prototypes, and test and build new equipment.
4. Maintain liaison with staff and students during the design and testing of equipment to check against specifications and design, and ensure effective communication is maintained between all parties involved.
5. Assist with testing and experimentation.
6. Liaise with other Technical staff and external contractors as necessary to complete the design and manufacture of the equipment.
7. Manage research project budget as required.

Technical Advice and Support

Outcome:

To apply specialised embedded and mechatronics systems and lab knowledge and skills to support and train students and staff.

Key responsibilities include:

1. Provide advice and tutoring/training to students and staff regarding embedded and mechatronics systems, and testing/measurement equipment and demonstrate their use and interpretation.
2. Investigate potential embedded systems and/or mechatronics solutions to meet identified needs and issues, and research improvements to the Department's facilities and equipment.
3. Construct/customise equipment to support research projects and classes.
4. Assist with the teaching and facilitating of the Department's Electrical Workshop and other practical courses.
5. Provide backup to the Embedded Systems Laboratory Technician, Electronics Research Engineer, and Power Electronics Research Engineer, covering for absences etc.

Equipment and Maintenance of Automation Lab

Outcome:

To apply specialist Automation/Mechatronics lab knowledge to ensure lab equipment is available and appropriately maintained.

Key responsibilities include:

1. Manage and maintain lab equipment such that it is functional as required for lab operation.
2. To manage the access rights of students to the Automation Lab after hours by providing a training program and conducting a competency assessment.
3. To support activities in the Laboratory with tutorials and demonstrations.
4. Ensure the Laboratory runs smoothly, within allocated resources and in a manner which meets the expectations and requirements of staff and students.
5. Provide input during the Department's planning and budget processes regarding the needs of the Laboratory, including planning for upgrades and development.
6. Supervise the correct use of all the equipment used in the Laboratory.

Strategic Direction

Outcome:

The University is assisted with the attainment of its strategic objectives through the provision of commitment and contribution to the strategic planning and initiatives of the Department.

Key responsibilities include:

1. Participate in Departmental strategic planning events when they occur.
2. Participate in projects in line with the Department's strategic objectives.

People Prepared to make a Difference | Tangata Tū, Tangata Ora

Outcome:

UC achieves its objectives through a culture that positively supports and empowers our people who are prepared to make a difference.

Key Responsibilities include:

1. Commit to developing and supporting a constructive culture at UC. Participate in and promote activities that seek to understand, build and reinforce the desired UC culture.
2. Reinforce UC's commitment to Health, Safety and Wellbeing:
    - Contribute to a safe environment for you, your colleagues, our students, contractors and visitors; engage with and adhere to the University's Health and Safety policies, procedures and guidelines, in addition to Health and Safety legislation.
    - Take responsibility and action when activities or situations compromise safety and/or wellbeing.
3. Respect and embrace Te Rautaki Whakawhanake Kaupapa Māori (Strategy for Māori Development) and Te Tiriti o Waitangi (Treaty of Waitangi).
4. Contribute to UC's commitment to inclusiveness, participation, recognition, support, and sense of belonging for all students and staff.
5. Contribute to the sustainability efforts of UC through the responsible use of resources and equipment.
6. Participate in projects and other duties as requested to support UC's success.

Professional Development and Review (PD&R) | Whakangungu

The University has a Professional Development and Review Process (PD&R) which is undertaken annually. During this process, the Manager and Staff Member will discuss and agree what contribution the Staff Member is expected to make during the review period towards achieving the University's objectives. Objectives (consistent with the Key Accountabilities and Competencies in this Position Description and the Department/Unit/College's Business Plan); performance measures (indicators of achievement) and the support (including development) required by the Staff Member to achieve these objectives will be agreed.

Embedded Systems Research Engineer

Education

- Bachelor's Degree (NZQA Level 7) in a relevant subject area, e.g. BSc (in Embedded Systems, Mechatronics, Electronics)

Required Registrations/Certificates/Licences

- n/a

Technical or Professional Knowledge, Skills, and Experience

- Applicants with a relevant Bachelor's degree (NZQA level 7) qualification will need to have skilled (i.e. four or more years) appropriate embedded systems and mechatronics systems experience. Applicants with a relevant National Diploma (NZQA level 6) qualification will need to have advanced (i.e. eight or more years) appropriate embedded systems and mechatronics systems experience.
- Comprehensive knowledge of embedded and mechatronics systems, with substantial and wide-ranging expertise in associated software development.
- Comprehensive knowledge of Programmable Logic Controller (PLC) operation, programming, and application.
- Proficiency in workshop engineering skills.
- An understanding of the engineering research environment and of technical experimental design.
- Experience in designing and building embedded systems hardware and mechatronic apparatus/equipment.
- Experience with autonomous robot operation.
- Proficient computer user including competence in MS Word, Excel, Outlook and Internet programmes, and relevant CAD software.
- Excellent interpersonal skills.
- Good verbal and written communication skills.
- Recognising Te Ao Ngāi Tūāhuriri - values, tikanga (processes), kawa (rules) of cultural practice and traditions and valuing Te Reo Māori.

Employment Checks

Candidates who successfully reach the final stages of the selection process for this role may be required to undergo Employment Checks, inclusive of but not limited to Qualification and Criminal History or Police Vetting checks. A satisfactory report from the relevant agency will be a condition of employment. The University will, however, make the final decision as to whether the appropriate standard has been met.

Competencies

These are the abilities, attributes and personal characteristics that the staff member will need to consistently display in order to achieve their Key Accountabilities (KAs) [that is, to do the job effectively]. These competencies describe how someone does the job, whilst KAs describe what is to be done.

Advance UC's Student Experience and Service Culture

Takes responsibility for delivering a world-class student and service experience.

Deliver UC's Vision

Aligns efforts and behaviours to UC's shared direction.

Achieve Results

Works constructively to meet or exceed agreed goals.

Engage with Innovation and Continuous Improvement

Supports UC initiatives, identifies continuous improvement opportunities, generates ideas and implements solutions.

Commit to the Continuing Development of Self and Others

Proactively develops knowledge, skills, behaviours and abilities that support UC success.

Be Connected

Develops and utilises collaborative relationships to accomplish goals.

Develop Bicultural Practice

Commits to applying Te Rautaki Whakawhanake Kaupapa Māori (Strategy for Māori Development) at an individual and operational level.

HRPF: PositionDescription