12 March 2025

Undergraduate Research Scholarship Program - Available Projects for 2025

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Project Title – Improving the trajectory of Collared Delma in south-east Queensland

Project supervisor/s and contact details	Dr Meg Edwards meg.edwards@unisq.edu.au Dr JP Emery jp.emery@unisq.edu.au
School/Centre affiliation	School of Agriculture and Environmental Science Centre for Sustainable Agricultural Systems
Additional information	This project is suitable for students in their 2nd or 3rd undergraduate degree with a major in Wildlife Management, Ecology and Conservation, Environment and Sustainability, or similar. It is expected that the candidate has some basic knowledge of Australian wildlife and their habitats, and an enthusiasm for fieldwork.
Project description	The collared Delma is an endemic legless lizard found in south-east Queensland. There is a paucity of information on this species, as it has a highly fragmented distribution, with limited records and low location accuracy. Therefore, this project aims to contribute new knowledge on the species through: • Assessing the response of collared Delmas to weed and fire management. • Improving the understanding of the impact of predators on the species; and • Establishing population estimates at properties throughout south-east Queensland. In this project, you will assist researchers with fieldwork and camera trap processing to contribute to the above project aims.
Future research activities	This project could be expanded, with additional analysis, into an Honours project in the Bachelor of Science Honours program. The fieldwork and analysis skills gained in this project are transferable to future post-graduate research projects and jobs
Project location	There will be fieldwork involved in Brisbane, Ipswich and Toowoomba. The rest of the project can be completed online or on campus. This project will need a computer to process camera images and analyse data, as well as communicate with the project team.
Time commitment	The expected time commitment for this project is 1-2 days per week for approximately 10 weeks.
Benefits for successful candidates	By completing this project, you will develop skills in fieldwork, camera trap processing, analysis, and writing scientifically. You will work with researchers from UniSQ, as well as interacting with and gaining industry connections. You may also be asked to deliver a presentation on your findings to the collaborating organisations, providing you with an opportunity to develop your public speaking skills.
Project outcomes	The research from this project will be incorporated into a broader project investing the ecology of the collared Delma and disseminated to industry. Successful completion of the project may result in the preparation of a manuscript for peer review and publication after completion of the scholarship, with the student as a coauthor.

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Project Title: Impact of silicon uptake by plants on root-lesion nematode reproduction

Project supervisor/s and contact details	Dr Rebecca Zwart Rebecca.zwart@unisq.edu.au
School/Centre affiliation	School of Agriculture and Environmental Science Centre for Crop Health
Additional information	This project is suitable for a 2nd or 3rd year student interested in Plant Science and involves conducting a glasshouse pot experiment. Necessary training will be provided.
Project description	Silicon (Si) is recognized for its role in enhancing plant resistance against a variety of phytopathogens, including bacteria, fungi, and nematodes. It serves as an effective plant growth regulator under both biotic and abiotic stress conditions. The defence mechanisms involved in plant-nematode interactions may include the formation of physical barriers, activation of plant defence-related enzymes, synthesis of antimicrobial compounds, and transcriptional regulation of defence-related genes. Root-lesion nematodes, specifically *Pratylenchus thornei*, are prevalent across Australian grain-growing regions and are responsible for significant yield losses in various cereal and pulse crops. This project aims to investigate whether the uptake of Si by wheat plants can reduce the reproduction of *P. thornei* in susceptible wheat genotypes. The experiment will focus on assessing the impact of Si on nematode reproduction and plant health, providing insights into potential strategies for managing root-lesion nematode infestations in wheat crops.
Future research activities	This project work could be expanded into an Honours project in the Bachelor of Science (Honours) program. The phenotypic data collection and statistical analysis skills gained in this project will be transferable to future post-graduate research projects that involving conducting glasshouse experiments.
Project location	To conduct this project, you will be required to come to the Toowoomba campus to work at the research facilities of the Centre for Crop Health (P20-26).
Time commitment	The expected time commitment for this project will be equivalent to 2 days per week for 10 weeks. Planting of the glasshouse experiment will be early June (2 week committed to prepare and plant experiment). Data collection from the glasshouse experiments will commence in Sept-Oct (8-week commitment to collect data and process soil and root samples).
Benefits for successful Candidates	You will work and interact with researchers and HDR students within the Crop Nematology team as well as more broadly with researchers at the Centre for Crop Health working on a mirid of economically important plant diseases. During this project you will develop skills in data collection, processing of plant and soil samples from glasshouse pot experiments, staining nematodes in plant roots, extraction and counting of nematode samples using a light microscope, and training in statistical analysis of data in R.
Project outcomes	The data collected and analysed during this project could contribute towards the preparation of a manuscript for peer review and publication on which you would be a co-author.

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Project Title: *Lantana camara* L. foliar endophyte diversity in south-east Queensland

Project supervisor/s and contact details	Dr Christina Birnbaum christina.birnbaum@unisq.edu.au A/Prof John Dearnaley john.dearnaley@unisq.edu.au
School/Centre affiliation	School of Agriculture and Environmental Science
Additional information	This project is ideal for students in their second or third year of an undergraduate program, majoring in Ecology and Conservation or Environment and Sustainability, or related fields. Candidates should have a basic understanding of Australian vegetation and plant ecology, along with a passion for fieldwork and laboratory work.
Project description	Invasive plant species can be both economically burdensome and ecologically harmful due to their competitive nature and ability to displace native species. Lantana (*Lantana camara* L.) is one of the most harmful invasive weeds worldwide, negatively impacting agricultural productivity and contributing to biodiversity loss, which in turn disrupts ecosystem services. While Lantana is known to decrease the richness of native plant species and alter soil chemistry, there is still limited knowledge about its long-term effects on native ecosystems in Australia. Therefore, this project aims to contribute new knowledge on the species through: Assessing the foliar endophyte diversity and composition in Lantana in SE QLD in relation to site type and environmental factors. In this project, you will assist researchers with fieldwork and laboratory work contributing to the above project aim.
Future research activities	This project has the potential to be expanded and developed into an Honours project within the Bachelor of Science Honours program or MRES project. The fieldwork and analytical skills acquired through this project are applicable to future postgraduate research and professional opportunities.
Project location	Fieldwork will be based in and around Toowoomba, and laboratory work on UniSQ Toowoomba campus D-block lab. Travel to fieldwork will with the supervisory team (no vehicle required).
Time commitment	The expected time commitment for this project is 1-2 days per week for approximately 10 weeks.
Benefits for successful Candidates	By completing this project, you will develop skills in fieldwork, laboratory skills (i.e., environmental data collection, processing leaf samples, isolating foliar endophytes, media preparation, fungal endophyte ID), data analysis, and scientific writing. You will work with researchers from UniSQ. You may also be asked to deliver a presentation on your findings, providing you with an opportunity to develop your public speaking skills.
Project outcomes	The research outcomes from this project will be incorporated into a broader research theme investigating the ecology of Lantana in Queensland. Upon successful completion of the project, there is a possibility of preparing a manuscript for peer review and publication, with the student being listed as a coauthor, following the conclusion of the scholarship.

Project Title: New approaches to reducing the impact of root-lesion nematodes in Queensland farming systems

Project supervisor/s and contact details	Dr Kirsty Owen Kirsty.Owen@unisq.edu.au Dr Jason Sheedy Jason.Sheedy@unisq.edu.au Mr Neil Robinson Neil.Robinson@unisq.edu.au
School/Centre affiliation	School of Agriculture and Environmental Science Centre for Crop Health
Additional information	This project is suitable for students in their 2nd or 3rd undergraduate degree studying agricultural science or similar. It is expected that the candidate has some basic knowledge of agronomy and plant pathology, and an enthusiasm and fitness for fieldwork.
Project description	Root-lesion nematodes are microscopic soil-dwelling parasites of plants that reduce the productivity and profitability of grain producing farms, however they are often unnoticed because of the subtle symptoms that they produce. In this project you will join the Crop Nematology team who are leaders in Australian nematology research both in the field and glasshouse settings with expertise in plant breeding, genetics, new methods to detect the effect of nematodes in plants, and communication with the scientific and rural communities. The project will allow you be part of research which determines the responses of both winter and summer crops to the nematodes (wheat, chickpea, mung beans). The information generated informs farmers about the management of root-lesion nematodes.
Future research activities	This project could be expanded, into an Honours project in the Bachelor of Science Honours program. The fieldwork and analysis skills gained in this project are transferable to future post-graduate research projects and jobs.
Project location	Glasshouse and laboratory work will be completed on-campus in Toowoomba at the Centre for Crop Health. For field trips, the student will travel with the research team and will leave from the Centre for Crop Health to research sites within an hour's drive of Toowoomba.
Time commitment	The expected time commitment for this project is 1-2 days per week for approximately 10 weeks.
Benefits for successful candidates	By completing this project, you will develop skills in fieldwork, laboratory and glasshouse methods associated with determining responses of plants to nematodes and writing scientifically. You will work with researchers from UniSQ, as well as interacting with and gaining industry connections.
Project outcomes	The research from this project will be incorporated into a broader project developing integrated nematode management practices for the Australian grain industry. Successful completion of the project may result in the preparation of a manuscript for peer review and publication after completion of the scholarship, with the student as a coauthor and involvement in outreach events with the farming community.

Project Title – Preparation and Characterization of Fire-Retardant, Recyclable Thermosetting Resins with Phosphorus-Containing Group and Imine Bond

Project supervisor/s and contact details	Prof. Pingan Song pingan.song@unisq.edu.au Dr. Siqi Huo siqi.huo@unisq.edu.au
School/Centre affiliation	School of Agriculture and Environmental Science School of Engineering Centre for Future Materials
Additional information	This project is open for either a 2nd or 3rd year student with a background in chemistry and material engineering.
Project description	*Background:* Disposable petroleum-based thermosetting resins have been widely used in industrial areas and human daily life. However, conventional thermosetting resins lack recyclability, because of their stable crosslinked networks. Hence, they are hard to degrade in natural condition even after hundred years, resulting in serious environment pollution. Therefore, it is significantly urgent to develop degradable and recyclable thermosetting resins. The intrinsic flammability of thermosetting resins is a major issue restricting their high-tech applications. Thus, developing fire-retardant, recyclable thermosetting resins remains a great challenge. *Project aim:* In this project, the successful applicant will help to prepare the recyclable, fire-retardant thermosetting resins by introducing exchangeable imine bonds and fire-retardant phosphorus-containing groups into the crosslinked network of thermosetting resins. In addition, the applicant will also help to characterize the recyclability and fire retardancy of the obtained thermosetting resins. *Project activities:* • Conduct a literature review about recyclable and reprocessable thermosetting resins and fire-retardant polymers. • Prepare recyclable, fire-retardant thermosetting resins by using P-containing dialdehydes and diamines as raw materials. • Analyse the curing behaviors of the polymer systems by differential scanning calorimetry (DSC). • Characterize the mechanical, fire-retardant, and thermal properties of the polymer system by different tests. • Explore the recyclability of the polymer system by dynamic mechanical analysis (DMA). • Contribute to a high-quality journal paper reporting the key findings.
Future research activities	The project can be extended into an Honours research project, and the candidate may also be able to apply the gained knowledge and experience to future research activities including a Masters or PhD project.
Project location	The successful candidate needs to work on Springfield campus throughout the duration of the project. The candidate may have the opportunity to collaborate with other students, researchers, and industrial partners. The candidate may complete some aspects of the project remotely from their home, such as literature review and data analysis. This will need to be negotiated with the supervisory team.
Time commitment	The successful candidate needs to commit 2 or 3 days per week throughout the duration of the project (10 weeks).

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Benefits for successful candidates	The successful candidate will have the opportunity to work with our students and researchers from different academic backgrounds. The candidate will receive extensive training in research skills. Skill development may include: • How to undertake a comprehensive literature review • How to conduct research • How to manufacture fire-retardant, recyclable thermosetting resins • How to carry out fire-retardant tests • How to analyse research data • How to prepare research report and paper
Project outcomes	After successful completion of the project, the candidate will work with the supervisory team to write one research article, which will be published in a high impact journal and/or in the proceedings of a national/international conference. The successful candidate will be a co-author in the article.

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School of Business

Project Title: Australian aircraft accidents – what do the bones say?

Project supervisor/s and contact details	Natasha Heap Natasha.heap@unisq.edu.au
School/Centre affiliation	School of Business
Additional information	This project is best suited for UniSQ Bachelor of Aviation students in their second or third year of study, with an interest in aircraft accident investigation and / or forensic investigation. There are two (2) positions available. The ideal candidate will have: • Developed research skills appropriate for advanced undergraduate studies, including familiarity with library and database research. • A basic understanding of EndNote; MS Excel and MS Word (further training will be provided if necessary). • Developing skills in critical thinking and evaluation. • Good written and verbal communication skills. • Good attention to detail. • Ability to work as part of a team. • Ability to work independently (under supervision).
Project description	This project will assist with a current research project being undertaken at UniSQ Aviation, and is bound by UniSQ Human Ethics Application: H22REA240P1 - Australian aviation accidents - what do the bones say? Since 1984 there have been c.835 fatal civil air accidents in Australia with an approximate total of 1055 fatalities. Of these fatal accidents c.319 involved more than one fatality (an approximate total of 924 dead). The over-arching project has two areas of investigation: 1) analysis of the use of forensic odontology for the identification of victims of mass disaster and 2) an analysis of types of trauma and fracture patterns suffered by victims of air accidents. In this project each student researcher will be an active participant in: 1. Conducting a systematic literature review; and 2. The writing up of the review with a view to publication. The student will be mentored through the process of collaborative research. It is estimated that the final developments of the written research will fall outside the bounds of the paid scholarship. The student will be credited as a co-author on all publications resulting from the systematic literature reviews. On successful completion of this project, students may apply for credit towards MGT3303 The Equipped Graduate.
Future research activities	This project is the beginning of a larger project as explained above. The research skills that the candidate will develop over the course of this project are transferable to future research activities. The results of this part of the project will be developed into a publication with the student being a co-author on the article.
Project location	The project can be conducted online. Generally, all team meetings will be conducted via Zoom and a Teams site will be set up for the project to store all data and files.
Time commitment	The elements of the project with which the student will collaborate as part of the scholarship program will run for 10 weeks. The student will be expected to work 8 hours (approx. 1 day) per week. This will include a weekly meeting with the project supervisor. If the student would like credit for MGT3303 this project will need to be completed during Trimester 2 or Trimester 3 offering of the course. If credit for MGT3303 is not required, the student can commence this project any time before January 2025.
Benefits for successful candidates	On successful completion of this research project, the student(s) will be able to:

	1. Apply a range of professional and personal attributes to develop communications that establish and build professional relationships with a broad range of research team members and project stakeholders. 2. Apply the principles of team dynamics and work collaboratively to achieve the project tasks. 3. Through communicating on the project and task progress with the Project Supervisor, engage in reflective practice that will support your transition to a post-graduation career. 4. Demonstrate research skills necessary for the accurate conduct of a systematic literature review. 5. Complete allocated research activities that contribute to a body of research for publication. These skills will be beneficial for moving into postgraduate study but are also transferable skills necessary for a successful career as a future aviation professional.
Project outcomes	The project will result in: • A minimum of one co-authored publication in a peer-reviewed scholarly journal (such as Forensic Science Research or Forensic Science, Medicine and Pathology). • The potential for a co-authored research seminar / conference presentation.

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Project Title: Beyond the paperless office: Sustainability and digital transformation in regional and rural Australia

Project supervisor/s and contact details	Dr Sachithra Lokuge Sachithra.Lokuge@unisq.edu.au Dr Anup Shrestha Anup.Shrestha@unisq.edu.au Dr Fiona Russo Fiona.Russo@unisq.edu.au
School/Centre affiliation	School of Business
Additional information	This project is best suited for 2nd and 3rd year students who are enrolled in business, information systems, and information technology degrees. However, considering the cross-disciplinary nature of the topic, we welcome students from other disciplines as well (i.e., health and engineering). We highly encourage (not mandatory) students who have successfully completed CIS1000.
Project description	Digital transformation and sustainability are both relevant and significant dimensions of modern business practices. The importance of these two areas increases with the complex and wicked business problems that require multi-disciplinary solutions. Contemporary examples of such problems include increased carbon emissions, environmental pollution, migration crises and pandemics. In this context, considering the sustainable development-related literature, there is little academic research that identifies the exact role of digital transformation toward sustainable practices, especially in regional areas and in the small to medium enterprise (SME) sector. The aim of this project is to build a solid understanding in relation to the status of the digital transformation, especially with the advancement of artificial intelligence in the regional Australia and how such initiatives could support sustainability, for example, to achieve the Sustainable Development Goals (SDGs) that contributes to the rural and regional sector in a meaningful way. The project explores the understanding of sustainability in digital transformation initiatives in rural and regional organisations. The student will work with the supervisors to conduct a systematic literature review (SLR). The objective of this SLR is to develop a conceptual model and articulate the gaps in this research area.
Future research activities	This project can be extended into a final year research project, an Honours thesis or higher degree by research (HDR) research project. The SLR will provide a foundation for broader research aligned to funding priorities of the Australian government in the areas of digitisation, sustainability, and regional/rural business.
Project location	The student can complete the project on-campus or distance online.
Time commitment	The duration of the project is 10 weeks. The student is required to commit at least 4 hours per week to the project. There is no set starting date for this project, and it can be negotiated with the supervision team.
Benefits for successful candidates	Successful completion of this project will build highly relevant business research skills such as accessing and managing existing literature, conducting a systematic literature review by following an evidence-based review protocol, identifying gaps in research, developing initial research models that can be extended further, working in a collaborative research environment, learning to use a citation management tool (e.g., EndNote) effectively and working with researchers from different disciplines. Successful completion of this project alongside high achievement in their degree program may afford students direct entry into the MRES program as a HDR pathway.
Project outcomes	A systematic literature review and further possible publications from the systematic literature review with the student as a contributor in the research team.

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School of Education

Project Title – Authentic Research Mentor Program Impact on Science Learning

Project supervisor/s and contact details	Dr Louise Puslednik louise.puslednik@unisq.edu.au
School/Centre affiliation	School of Education
Additional information	A secondary Bachelor of Education student with an interest in Science and/or Mathematics would be suitable
Project description	Authentic Research Mentor Programs (ARMP) represent a powerful model of learning whereby students engage in hands on original research, finding solutions to real-world problems with the cognitive and personal support of a mentor. The undergraduate researcher will examine the impact of students' science learning who have participated in an ARMP. For five years Year 10 student cohorts from a regional school have engaged in a year-long ARMP with science academics researching breast cancer detection. Academics have delivered regular tutorials on statistical data analysis, scientific writing, and experimental design within the context of students show casing their research to an academic audience at the end of the academic year. This research will assess and evaluate the impact of the ARMP on students' science learning and their 21st century skills. The ARMP will be evaluated using the NSW Year 10 VALID independent science assessment scores of mentees relative to a control group. This quantitative research will assess the impact of the program building on the previous work of Puslednik and Brennan (2020). Significantly, this research addresses the disparity in science outcomes between regional and urban schools. The undergraduate researcher would be undertaking research associated with analysing data to assess the ARMP mentees' academic performance in science knowledge and skills (Table 1). Mentees' academic performance will be determined via The NSW Department of Education Year 10 VALID science assessment. Initially the undergraduate researcher would be provided with background to the research project and with previously published journal articles to read. This will include an article which outlines the method for analysing data to assess the ARMP mentees' academic performance. This would be followed by tutorials on data analysis, specifically focusing on descriptive statistics as well as inferential statistics including hypothesis testing using students t-test and analysis of variance. These are the statistical tests the student will use in analysing mentee's academic performance as compared to a control group of students. This data analysis will be conducted for the five cohorts of students who engaged in the ARMP. Following this the undergraduate researcher will extract data from de-identified spreadsheets for both the mentee group and a control group of students for each of the five measures of performance given by the VALID assessment for each cohort. The undergraduate researcher will generate new spreadsheets and prepare them to be imported into GraphPad Prism statistical package. The student will then draw on their knowledge of statistical analysis to undertake an analysis of variance comparing the mentee group to the control group for each of the five performance measures for each cohort. Based on the results of the statistical analysis the undergraduate researcher will in collaboration with the academic interpret the results of the data analysis. Finally, the undergraduate researcher will create five data tables (one for each cohort) showing the comparison of mean science performance scores between

mentee group and control group using five different Year 10 VALID performance measures.

Table 1. Activities of undergraduate researcher are to be undertaken as part of the research project examining the impact of ARMP on science learning across five cohorts.

Week	Undergraduate Researcher Activity
1	Tutorial with academic introducing the research project. Previous research papers will be provided to the undergraduate researcher to read.
2	Tutorial with academic introducing descriptive and inferential statistics with a focus on hypothesis testing using students t-test and analysis of variance (ANOVA).
3	Tutorial with academic demonstrating how to use statistical software GraphPad Prism, allowing the undergraduate researcher to experiment with statistical software using previously published data.
4	Extraction of mentee Year 10 VALID scores for each cohort using the five performance measures. Data recorded in spreadsheets. Determine, and record, the range of Year 8 VALID scores of mentee students' scores for each cohort.
5	Using the range of mentee Year 10 VALID overall scores, create control group for each cohort. Extract control group Year 10 VALID scores for each cohort using the five different VALID performance measures. Record data in spreadsheets.
6	Prepare spreadsheets for data analysis in statistical package GraphPad Prism. Import data into GraphPad Prism ready for data analysis.
7	Perform ANOVA data analysis for each cohort comparing mentee academic scores to control groups scores for each of the five VALID performance measures.
8	Interpretation of data analysis, examining significant differences and non-significant differences within the five Year 10 VALID performance areas for each cohort.
9	Discussion of this interpretation of the data analysis with academic.
10	Creation of five data tables showing comparison of mean science performance scores between mentee group & control group for five cohorts using five different Year 10 VALID performance measures.

Future research activities	There is the potential that this research could be extended to a Master of Education or Master of Research topic.
Project location	Springfield
Time commitment	This research will be completed over a 10-week period. The student is expected to work 10-11 hours (maximum of 2 days) per week during the 10 weeks. Start dates are negotiable.
Benefits for successful candidates	The research will provide the undergraduate researcher with a deeper understanding of descriptive and inferential data analysis as they are used in research, and how to draw inferences and conclusions from these analyses. This project will allow for a deeper understanding of how to design research within an educational context. The candidate will be invited by the team to present this research, as well as attend the School of Education Research Cluster meetings. This will allow the undergraduate researcher to develop communication skills and broaden their knowledge of research within the field of education.
Project outcomes	The outcome of this research will be a completed longitudinal quantitative data analysis of the performance of students who have participated in an ARMP. This data analysis will then be used as the basis of a publication to report on the longitudinal outcomes of this program. This program will also provide the undergraduate researcher with data analysis skills and experience using data analysis software as well as communication skills.

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Project Title: The Educational Impact of Children's Picture Books

Project supervisor/s and contact details	A/P Martin Kerby martin.kerby@unisq.edu.au Dr Alison Bedford alison.bedford@unisqu.edu.au Eseta Tualaulelei eseta.tualalulelei@unisq.edu.au Dr Tracey Chamlin tracey.chamlin@unisq.edu.au Prof. Margaret Baguley margaret.baguley@unisq.edu.au
School/Centre affiliation	School of Education
Additional information	Applicants best suited to the project would be a 3rd year Bachelor of Education (Primary or Secondary) student, particularly those interested in the areas of History, the Arts, Inclusive Education, or First Nations Histories and Cultures.
Project description	This project builds on the research team's exploration of the educational impact of children's picture books. Areas which the team are focusing on include how children's books deal with trauma (war/conflict) (Baguley & Kerby, 2022), postcolonialism (First Nations, explorers, national identity) (Zerafa-Payne, et al., 2023; Baguley & Kerby, 2023; Baguley, et al., 2023), and inclusion and gender (LGBTIQA+) (Kerby et al., 2022; Bedford et al., 2023) by how authors and illustrators strategically and aesthetically using image and text. The student researcher will be involved in a series of research tasks, including the analysis of a children's picture book using the principles of systemic functional theory to understand the 'grammar' of the images that have been used. This will be undertaken through the three perspectives outlined by Painter et al., (2013) which involve the visual construction of the narrative events and characters (ideational meaning), the visual positioning of the reader through choices related to focalisation and appraisal (interpersonal meaning), and the discourse organization of visual meanings through choices in framing and composition (textual meaning). In addition, the student researcher will be guided through the process of conducting a literature review related to the themes related to the children's picture book and how to write the methodology related to the visual analysis they have undertaken. This will be incorporated in a draft journal article which they will co-publish with members of the research. They will also be introduced to international collaborators of the research team through the GALACTIC site: Global Association of Literary and Artistic Critique: Texts, Influences, Cultures –Exploring Children's Literature (wordpress.com). The outcome for the student researcher will be learning research skills in visual analysis, the construction of a literature review, and the drafting of a journal article and presentations. The visual analysis skills will also be invaluable for their teaching approach and assist in the selection and presentation of children's picture books in their classroom. These skills will also contribute to a research pathway such as the Masters of Education, the Masters of Research and a PhD program. **References:** Baguley, M., & Kerby, M. (2023). The use of images to explore the Indigenous experience of conflict in Australian children's picture books. Bookbird: a journal of international children's literature, 61(3), 55-64. Baguley, M., Bedford, A., Ryan, L., Kerby, M., & Tualaulelei, E. (2023). A visual analysis of Meet. Captain Cook (2011) – a modern Australian picture book. Australian Art Education, 44(3), 3-16. Baguley, M., & Kerby, M. (2022). A beautiful and devilish thing: children's picture books and the 1914 Christmas Truce. Visual Communication, 21, 518-541. https://doi.org/10.1177/1470357220981698 Bedford, A., Brömdal, A., Kerby, M., & Baguley, M. (2023). Just how radical is radical: Children's picture books and trans youth. Children's Literature in Education: an international quarterly. https://doi.org/10.1007/s10583-023-09537-9 Kerby, M., Curtis, E., Bedford, A., & Baguley, M. (2022). The subjugation of art to propaganda: An antitrans children's picture book and the culture wars. Australian Art Education, 43(2), 186-199. Painter, C., Martin, J.R., & Unsworth, L. (2013). Reading visual narratives: image

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	analysis of children's picture books. Equinox. Zerafa-Payne, E., Kerby, M., Tualaulelei, E., Bedford, A., & Baguley, M. (2023). Not just in black and white: Aboriginal and Torres Strait Islander peoples in Australian children's picture books. Australian Journal of Language and Literacy. https://doi.org/10.1007/s44020-023-00048-
Future research activities	This project can be extended into a Master of Education, Master of Research or Doctoral research project.
Project location	The successful candidate can work at the Toowoomba or Springfield campus or online for the project's duration with opportunities to work with other students, academics and researchers. To undertake this project, you must have access to a computer with a webcam (for Zoom meetings with the project team).
Time commitment	The project can be undertaken anytime between mid-June to December 2024, to be negotiated with the supervisory team. The student would need to be able to commit to 2 days a week for 10 weeks on average.
Benefits for successful candidates	The successful candidate will gain experience working in a collaborative research team and will participate in research activities that they can utilise for future research projects. They will also be invited to engage with research activities and workshops as appropriate to the project and an invitation to present the outcomes of the project with the team at a presentation for the School of Education.
Project outcomes	Skills in visual analysis, construction of literature review, drafting of journal article, collaboration with research team and international collaborators, journal article, presentations.

School of Engineering

Project Title: Chemical and Microstructural Characterization of waste glass materials from Council sites in Queensland for incorporating as a sand replacement in road base and concrete applications

Project supervisor/s and contact details	Dr Hannah Seligmann Hannah.seligmann@unisq.edu.au
School/Centre affiliation	School of Engineering
Additional information	This project is aimed at either a 2nd year or 3rd year Civil Engineering student. The student will need to have basic skills in analysis in excel and be available to do on-campus experimental work in either Springfield or Toowoomba. The student will be trained in experimental design and investigation throughout the duration of this project.
Project description	Waste glass contributes a large proportion of solid waste material to landfill. In Australia, only 46% of glass products are recycled, and in the 2018-2019 year, 141,140 tonnes of glass products were recorded as being sent to landfill. There has been significant interest in using crushed waste glass product as a replacement for aggregate materials, particularly as a sand replacement in road-base and in concrete. However, the sources of waste glass vary significantly, and this variation has been linked to variations in strength and durability. **Project Aim:** In this research you will help to characterise the properties of waste glass from varying locations in QLD and quantify how these variations might impact on their applications in the civil construction industry. **Project Activities:** The activities that will be conducted as part of this investigation include the following: - Conduct a literature review into how waste glass materials are currently used in the civil construction industry in QLD - Conduct an experimental investigation into the micro-scale properties of waste glass from three (3) different locations in QLD. These micro-scale investigations are likely to include: - Scanning electron microscopy and image analysis to determine shape and size properties - Atomic force microscopy to determine the surface roughness of glass particles - Chemical analysis of the composition of the glass - Conduct an experimental investigation into the macro-scale properties of waste glass from three (3) different locations in QLD. The macro-scale investigations are likely to include: - Aggregate crushing value - Aggregate absorption ***If time permits,*** prepare mortar cylinders with glass mixes to compare the compressive and indirect tensile strength of mixes. - Contribute to a journal paper that summarises key findings.
Future research activities	This project can be extended further into an Honours research project which will open the opportunity to transfer the gained knowledge and experience to future research activities including a Master's or PHD program of research.
Project location	The successful candidate will be required to work at Springfield or Toowoomba campus for the duration of the project with opportunities to work with other students, research and industrial partners. Some aspects of the project including the literature review and data analysis may be able to be completed off campus from the candidate's home. This would need to be negotiated with the supervisory team.

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Time commitment	This project involves a maximum time commitment of 2 days per week for 10 weeks intensive R and D project. This project may partially assist engineering students who are trying to meet their work placement requirements.
Benefits for successful candidates	The successful candidate will gain experience working in a collaborative research environment and with researchers from different disciplinary backgrounds. Skill development will include: • Understanding of crushed waste glass uses in the civil construction industry • Preparation for a literature review • Data collection and data analysis • Experimental design and testing • Opportunity to meet and engage with industry partners and other interested stakeholders.
Project outcomes	The results of this project are expected to provide useful information that is required to determine the most suitable uses of waste glass in the development of novel and sustainable construction materials. Data from the project may also be used in publishing high quality journal articles. The successful candidate will be a co-author on these outputs.

Project Title: Design, manufacturing, and testing of novel lattices

Project supervisor/s and contact details	Dr Sourish Banerjee Sourish.Banerjee@unisq.edu.au
School/Centre affiliation	School of Engineering
Additional information	This project is suited for a 3rd year level for both Civil & Mech. It is expected that the student has a background knowledge of mechanics and modelling using any AUTOCAD software. It would be a bonus if he/she has completed a research methodology course.
Project description	Lattice materials have high stiffness and strength to density ratios due to their porosity Natural materials like wood, cork, bone are examples of such materials, while honeycombs and foams are their synthetic manmade counterparts. These materials also possess good thermal insulation and acoustic damping properties. These materials have been used in aerospace and marine industries along with infrastructure, packaging, and sports goods industries. These materials are interesting in the aspect that by changing the topology, different lattice geometries can be obtained with remarkable properties. An example is the negative Poisson's ratio observed in an auxetic lattice that is not found in solids. This project aims to develop novel ultralight yet stiff, strong, and tough lattices that can be tailored to various applications. Because of the intricate features in various length scales, additive manufacturing methods - 3D printing will be used for making these samples. **Objective:** To design, manufacture and test a novel topology of lattice with enhanced mechanical performances The students need to undertake the following activities: • Draw the geometry of the lattice samples • Manufacture the drawn samples in the laboratory using 3D Printing, • At the next step, test the mechanical properties of the lattices using the state-of-the-art experimental facilities at the UniSQ, • The student will be guided at each step of the project. Thus, they will have a good exposure of designing, making, and testing of these lattices.

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Future research activities	The project is a part of a proposed HDR research project. It can be extended to a final year Honours thesis, and to a HDR research project. The research skills and the experience gained during designing and making the samples and, testing would be valuable in future research activities.
Project location	The successful student needs to come to Toowoomba campus to carry out the project for the duration of the scholarship.
Time commitment	The student needs to commit at least 2 days per week over the duration of 10 weeks. It can be undertaken in a couple of blocks, and this will need to be negotiated with the supervisor.
Benefits for successful candidates	The student will learn how a research project is conducted and the importance of creative thinking. They will be exposed to how a research activity is undertaken and will gain experience in working in collaborative research environment at the School of Engineering. Apart from the creative thinking, research and communication skills, the student will develop the following skills • Introduction to 3D printing • How to model lattice using AutoCAD software and make samples using the 3D printing • Experimental testing
Project outcomes	Apart from the test results, it is expected that the project findings will provide an insight into the design, manufacturing process and mechanical behaviour of these novel materials. The knowledge gained will be used in further research on the enhanced design of these lattices. Depending on their contribution and findings, their name will be included in a conference paper and/or in a journal publication in future. In addition, they can continue to a PhD program in this area after graduation. Furthermore, they will learn about a material that they may have seen but would not have known about how changing the topology of the lattices can lead to very different properties.

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Project Title: Development and Characterization of 3D-Printed 4D Shape Memory Polymers for Orthotic Applications

Project supervisor/s and contact details	A/Prof Jayantha Epaarachchi jayantha.epaarachchi@unisq.edu.au Dr Janitha Jeewantha janitha.jeewantha@unisq.edu.au Dr Sachini Wickramasinghe sachini.wickramasinghe@unisq.edu.au A/Prof Omar Alajarmeh omar.alajarmeh@unisq.edu.au
School/Centre affiliation	School of Engineering Institute of Advanced Engineering and Space Sciences Centre for Future Materials
Additional information	This project can be conducted by 2nd and 3rd year students of Mechanical/ Material Engineering students. It would be beneficial for the candidate to have experience of operating a 3D printing machine.
Project description	The development and characterisation of 3D-Printed 4D shape memory polymers (SMPs) for orthotic applications aims to utilise 4D printing technology to fabricate adaptive, patient-specific orthotic devices. Unlike conventional orthotic materials, 4D SMPs can actively respond to external stimuli, enabling shape recovery, self-adjustment, and enhanced biomechanical adaptability. This project utilizes PLA based SMP filament focusing on optimising the 3D printing process and evaluating functional performance. The study also explores the impact of printing parameters (layer thickness, infill structure, orientation) on mechanical properties, shape fixity, and recovery efficiency of the 3D printed components. The project objectives include: **Thermomechanical and shape memory characterisation of the filament:** Evaluating tensile, flexural, and compression properties, along with shape recovery behaviour under different activation conditions. **Optimisation of 3D printing parameters:** Investigating the influence of process variables (temperature, print speed, infill density, and patterning) on structural integrity and functional performance. **Proof-of-concept demonstration:** Designing, fabricating, and testing a customised printed orthotic device, ensuring practical usability and patient comfort. This research aims to develop a next-generation, adaptive and reusable orthotic solution, reducing reliance on traditional orthopedic materials while enhancing, user comfort, and durability. The outcomes will contribute to advancements in personalised healthcare, rehabilitation, and sports medicine, positioning 4D printing as a transformative technology in biomedical and assistive device manufacturing. The student will be required to create these shapes on a 3D modelling software (Creo) which the student has access to. Then the student can print this model at P11 and after will perform some testing to confirm its functionality. The student will be required to perform thermal-mechanical testing under the supervision of the project supervisor. Finally, the student will be required to complete a report with findings. **4D SMP** **3D Printing** **Orthotic solution**
Future research activities	The project has the potential to be extended into an Honours or Master's research project. Additionally, the supervisory team plans to apply for the AEA Seed grant to support an expanded version of this study. Students involved in preliminary research will have a valuable opportunity to pursue further studies in this field.

Project location	The successful candidate will primarily be required to work on the Toowoomba campus mostly in P11, for the duration of the project. However, for certain experiments, the candidate will be required to visit the Springfield campus. The candidate may be able to complete some aspects of the project remotely, such as literature review and data analysis and can be discussed with the supervisory team.
Time commitment	The student must commit to two days per week over a 10-week period. This commitment can be structured into multiple blocks, subject to discussion and approval by the supervisory team.
Benefits for successful candidates	The candidate will gain practical experience in a multidisciplinary research setting, collaborating with researchers and technical experts. This opportunity will develop research skills, enhance technical proficiency, and strengthen teamwork, fostering a dynamic and innovative learning environment. At the completion of the project, student will develop the following skills: • Systematic literature review and planning research • General understanding of safety and risk assessments • Material characterisation and test procedures • 3D modelling and 3D printing • Data collection, analysis and report writing
Project outcomes	The project characterises the mechanical, thermal, and shape memory properties of 4D SMP filament, providing a scientific foundation for its practical application in biomedical engineering. The findings will contribute to advancing adaptive and reusable orthotic solutions, supporting the integration of 4D printing technology in orthopaedic treatments, emergency response splints, and patient-specific medical devices. This research establishes a foundation for future clinical adoption and commercialisation, driving innovation in personalised healthcare and assistive medical technologies.

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Project Title: Development of Grass-Reinforced Natural Fibre Composites for Building Applications
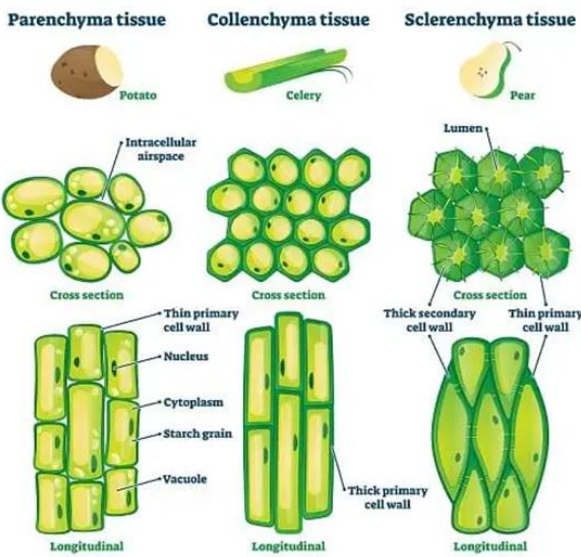
Project supervisor/s and contact details	Assoc Prof Mainul Islam Mainul.Islam@unisq.edu.au
School/Centre affiliation	School of Engineering and Centre for Future Materials
Additional information	Any research-minded mechanical or civil engineering students in their second year and above should be able to conduct this project. An understanding of basic statistics and Excel for data analysis will be advantageous.
Project description	Agricultural wastes can be used in the production of environment- friendly composite materials. Wastes can be used as reinforcing constituents to be mixed with a polymeric resin to create engineered natural fibre reinforced composites. Natural fibre reinforced composites made utilising these wastes are relatively new. However, waste reinforced polymeric composites can be engineered through research and development for the uses as various components including sandwich composites for building and other applications as structural and semi-structural components. There has been an incredible development in polymer matrix composites of various plant fibres. Grass fibres are one type of the important plant fibres which occur in different parts of plants, mainly in the stems and leaves. Novel grass-fibre reinforced composites have a great potential particularly in building industries. Quality grasses from lawn mowing wastes will be extracted for chemically treated with simplified processes. Then a suitable polymeric resin will be used for fabricating these composites. The fibres can also be of various size ranges and combinations depending on the potential applications. Various types of sandwich composites can also be made by selecting different constituent materials for skins and these composite cores. Main objectives of this project are to (a) develop novel natural fibre composites using grasses as agricultural wastes with chemical treatment, and a suitable polymeric resin, (b) investigate relationships between various fabrication parameters, (c) investigate mixing behaviour of fibres and resin, (d) characterise mechanical and other behaviours of the developed composites, and (e) develop and investigate properties of novel sandwich composites made of developed composite cores and suitable skins.
Future research activities	A further extension of this project could be an Honours research project, enabling the transferred knowledge and experiences to be applied to future research activities such as Masters by coursework or research and PhD studies.
Project location	It will be necessary for the successful candidate to usually work in Toowoomba campus throughout the duration of the project due to the Toowoomba campus having well-established nationally leading experiment facilities. This will also benefit the candidate by collaborating with other senior students and researchers. The candidate may be able to complete some aspects of the project remotely from their home, such as literature review and data analysis. In this case, this would have to be negotiated with the supervisor.
Time commitment	The time commitment required for the project is normally for 10 weeks with an indicative involvement of 3 days per week, as per a tentative timeline below. **Week 1**: Become familiar with the project and working environment, Weeks 2-3: Literature review on the topic and relevant area, **Week 4**: Develop methodology and prepare RMP for experiments, Weeks 5-7: Fabrication and testing of the developed composites, Weeks 8-9: Data analysis and write up, **Week 10**: Wrap up the project and presentation/report submission.

Benefits for successful candidates	By working in a collaborative research environment with other senior students, researchers and technical staff from different disciplines, the candidate will acquire a diverse range of experience. Skills development may include: 1. Becoming familiar with the nationally leading advanced research centre and facilities, 2. Developing literature review skills through this project, 3. Developing engineered composites using agricultural wastes, 4. Understanding the testing procedures for characterising materials properties, 5. Collecting and analysing experimental data, 6. Opportunity to interact with potential industry and other interested parties which may lead to post-graduation employment opportunities.
Project outcomes	Upon successful completion of the project, the candidate will work with the supervisor to produce a publishable co-authored article in a high impact journal and/or in the proceedings of a national or international conference.

Project Title: Engineering coal into sustainable fertilisers

Project supervisor/s and contact details	A/Prof. Lei Ge lei.ge@unisq.edu.au
School/Centre affiliation	School of Engineering, Centre for Future Materials
Additional information	
Project description	This project is under the Department of Education AEA seed program. We will be engineering design activated lignite to slow-release fertiliser (SRF) in collaboration with the Australian fertiliser/lignite industry. This project can provide a very cheap but effective SRF and could overcome the cost barrier of peer SRF products. The research supports the Government's goals to improve fertiliser effectiveness and reduce losses to runoff to the waterways e.g. Great Barrier Reef and mitigate greenhouse gas emissions. The lignite simultaneously adds bio-carbon to the soil, improving soil sustainability. The cost of market-ready SRFs (polymer-embedded fertilisers) is currently so high that it is economically better to over-apply conventional fertilisers and accept losses to the environment. Lignite provides a very cheap but effective ion exchange host and could overcome this cost barrier. More importantly, our proposed lignite-based SRFs will eliminate the usage of polymer coating that is free of the microplastic issue thereby easing human health and environmental concerns. This project is experiment based, so student needs to do sample preparation and analysis in the lab. This project will mainly be based on Springfield Campus Material labs and may also work within the Centre for Agricultural Engineering facilities depending on the progress.
Future research activities	The specific research objectives of this project are: 1. To design and fabricate SRF from lignite by surface chemistry control and in-situ nutrient formation. 2. To validate the nutrient release characteristics of SRFs towards the greenhouse plant trials as well as evaluate the reduction of greenhouse gas emissions.
Project location	Springfield campus
Time commitment	1-2 days per week with a total of 10-15 h per week
Benefits for successful candidates	Research training on both fundamental research and potential opportunity to work with industrial partners on technology development.
Project outcomes	The outcome of this project is to sustainably convert lignite into a cost-effective polymer-free slow-release fertiliser that reduces environmental impact and provides efficient nutrient delivery. This project will also provide students the opportunity for future PhD study.

Project Title: Experimental imaging and analysis of heterogeneous plant food cellular structure during drying operations

Project supervisor/s and contact details	Wijitha Senadeera (UniSQ) wijitha.senadeera@unisq.edu.au Jasmine Banks (QUT) Charith Rathnayake (University of the Sunshine Coast)
School/Centre affiliation	School of Engineering
Additional information	• Student should be familiarized with MATLAB in general and he or she know Image Processing with it or willing to learn image processing and create algorithms for image analysis using MATLAB. • General understating of statistics for data analysis and interpretation. • Report writing skills. • Suitable for 3rd year Mechanical/Mechatronics or Electrical Engineering student. • This project is an eye opener for robotic vision studies.
Project description	**AIM:** Development of an image-based algorithm for the determination of cellular heterogeneity among plant cells during drying and rehydration using MATLAB software **Background:** Figure 1 Different plant cells (Source: Katy, McLaughlin, 2001, Plant Cell, https://biologydictionary.net/plant-cell/) Plant cells are coming in different shapes and sizes (Fig. 1). Changes of cell size and shape deformations are observed during when they undergo food processing operations such as drying and rehydration. These changes can be visualized by using scanning electronic microscopic (SEM) images. Currently these images are analysed with MATLAB image processing algorithms for different parameters like cell area, perimeter etc. Current knowledge of analysis of deformation is on the average behaviour of cells considering individual cells. But in actual practice cellular deformations are in a heterogeneous manner. In present modelling work in drying and rehydration, homogeneous or similar cell shapes are used. If heterogeneity can be incorporated in these models' prediction behaviour of food products are closer to reality and optimum parameters can be found for processing operations. Experimental scanning electron microscope (SEM) images during drying and rehydration are readily available to be used in developing the algorithm. In that project, average cell parameter algorithm was developed, and this is an extension to incorporate the heterogeneity identification algorithm of the cells in a tissue.

	What student will do: Student will develop an algorithm using MATLAB image processing techniques to determine the properties (perimeter, area etc.) of 2D SEM images of plant material during drying and rehydration. This algorithm helps to determine cellular heterogeneity (differences in basic cell properties) and ensemble averages during different stages of drying. Steps in the project work (milestones) 1. Literature review on image processing applied to determination of plant cell properties 2. Familiarisation of the image processing in MATLAB 3. Identification and isolation of cell boundaries in SEM images 4. Development of an algorithm to calculate individual cell properties (earlier work is already there to familiarise) 5. Development of an algorithm to calculate cellular heterogeneity 6. Use of statistics to interpret the heterogeneity 7. Report writing
Future research activities	So far, only ideal, and homogeneous models have been developed. In future research, real materials such as fruits and vegetables of commercial significance will be subjected to detailed investigations through computational modelling as well as experiments. This study can be expended to an honours project to study how the parameters such as maturity/ spatial distribution (i.e., location in the cell structure; differences of deformation due to cell sizes/shapes) contribute to cellular deformations in a heterogeneous manner. As, it is expected that, the findings will be of much interest to the field of engineering and science, particularly in industrial scales (i.e., the industrial food processing often requires to predict how a real plant food material will deform during drying e.g., drying of apple pieces from fresh as given in Figure 2 below). Using multiscale modelling techniques, a student can further study for a higher degree at PhD level. Figure 2 Fresh and dried apple rings
Project location	• Initial phase of the period student needs to come to university and familiarize with the past completed project. Time to time he/she may need to contact QUT or University of the Sunshine Coast University staff via online to discuss progress and get advice regard to his/her work. • Report writing can be undertaken at anywhere and need to discuss the progress with the supervisors through meeting (via ZOOM). • Regular meeting per week should be essential.
Time commitment	Project runs for 10 weeks. Student needs to commit to a maximum of 2 days per week for the duration of the project.
Benefits for successful candidates	Student will improve the following. • Working with three supervisors who are experts in three different field e.g. Food processing, EM, image processing and development of MATLAB Algorithms • Familiarised with research environments and how it operates • Ethics and safety related to research environment • Research report writing and presentation skills

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Project outcomes	• The student will gain a valuable experience in image processing techniques; this will improve their skills as a novice researcher. • This model will provide a source of guidance for industrial practitioners to optimize food drying operations in terms of final product quality, nutritious value, and overall process performance. • In addition, the developed computational framework has potential future applications in modelling a wide range of plant and animal cells. • Publication of findings in Q1 journals (targeting Journal of Food Engineering as a tentative journal and student can be a co-author) • Further develop into grant applications.

Project Title: Improvements in soil density and compaction test and analysis

Project supervisor/s and contact details	Dr Habib Alehossein Habib.Alehossein@unisq.edu.au
School/Centre affiliation	School of Engineering
Additional information	Preferred completion of Geotechnical Engineering courses CIV2403 and CIV2901
Project description	Solid minerals, organic matters, water, and voids are the main components of natural soils. However, soil deformability, density and shear strength can reduce substantially as the soil water content increases. An increase in soil water content will increase soil volume, hence reducing its density and increasing its permeability and erosion-ability. By compacting agricultural soils, not only soil pore volume decreases, causing an increase in the bulk density, but also soil void arrangements and structures deteriorate, causing permanent deformation. Proctor compaction testing is rarely used in laboratories, as most of the agricultural soil compaction tests are carried out in the field with the purpose of assessing the suitability of the soil void structure for cultivation. A modified compaction theory and testing is proposed here that can equally benefit both disciplines beyond the conventional proctor test results. This new test measures not only the traditional soil density, but also deformability and shear strength or bonding of the soil, which is highly important to both farmers and engineers. Supervised and mentored by our highly experienced laboratory engineers, you will conduct a series of soil compaction tests under a digitally load-displacement extruder setup to remove your compacted soil specimens. You will take photos and videos of the testing procedures and document them in both EXCEL and WORD files. A typical test will consist of following steps (See figures below as well): (a) You will be given 1500 g of dry coarse soil, plus 250 g dry clay and plus 250 g dry silt to first complete a sieve analysis before your compaction test. You will record all the results and graphs in your EXCEL file. (b) Mix this dry soil well in a dry tray. (c) Measure mass of your compaction mould (M_mould) and all the attached accessories (M_collar, M_base) separately and record them in your EXCEL file. Measure both inner diameter and height of the mould to calculate its exact volume V_mould. (d) Pour this well-mixed dry soil in the mould without applying any compaction and measure the mass of the uncompacted dry soil, M_uc_dry_soil. (e) Apply a compaction test in 3 layers and again measure the mass of the compacted dry soil, M_c_dry_soil. (f) Now add 1%, 2%, …. water to your 2000 g soil, so that your wet soil total mass in the tray becomes 2000(1+w/100) where w is the total water content. Mix it well in a tray, once ready, cover it with a plastic nylon in order not to lose any soil moisture with time. Otherwise check the soil total mass (M_wet_soil = 2000(1+w/100) g) and add water if the wet soil mass in the tray drops below this number due to the loss of moisture to the air) (g) Gently fill up the (one litre volume) compaction mould without "any compaction at all" and measure the mass of the mould with this uncompacted sample inside it. Therefore, this should give you the mass of the WET UNCOMPACTED soil, M_uc_wet_soil. (h) Now start your compaction test - in three horizontal layers with 25 blows on each layer where the hammer hits the soil layer top surface section uniformly. Once compacted sample is trimmed and ready, measure the mass of the mould and the compacted wet sample. Therefore, this should give you the mass of the WET COMPACTED soil, M_c_wet_soil. (i) Now make sure your designed removal setup has a rigid non-deformable and non- moveable base and start the test at very low rate, until reaching the maximum force, after which you can increase the rate as much as you like.

Future research activities	The knowledge and techniques you practice in this project will not only enhance your civil-geotechnical-mechanical engineering soft and hard skills, and EA required competencies and capabilities, but also give you the opportunity and option to transfer them to your future research projects. In addition, the study topic can be extended into an Honours thesis, Master or PhD research work. This is an important topic which has been attractive to mining, civil, agricultural, mechanical and electrical engineers and pertinent industries both nationally and internationally.
Project location	The student will be required to travel to Toowoomba campus to participate in this project. The location is the soil mechanics laboratory
Time commitment	This project will be conducted during normal working hours (8am to 4pm). Our staff in the lab are flexible enough to work with the student's availability. The entire research project is designed as a 2-month study. The project component of the study involves 10 weeks. You will attend 1 to 2 days per week, depending on your time and availability. The student work will be (i) help completing the tests with our lab staff as part of their team, (ii) help recording all the results, (iii) help analysing the results, (iv) help doing a literature survey, (v) writing a final report, and potentially (vii) collaborate and help to write a journal article on the subject.
Benefits for successful candidates	This a great opportunity for the engaged student to work with international experts in a collaborative research environment, learning how to conduct and manage highly delicate testing processes and procedures with the highest accuracies and reliabilities - coming up with a new design and novel technique for extracting soil properties, as required in both soil analysis and soil engineering practice. Apart from the skills to manage and conduct the tests, analysing data and results and writing a professional report, the student will have the opportunity to develop knowledge in soil or geotechnical engineering research and development.
Project outcomes	The outcome of this project in relation to the student engagement are as follows: 1. Learning how to be innovative, as innovation is highly crucial in advancing skills of our future graduates, engineers, researchers or scientists. 2. Participation in a team for the development of a new compaction testing tool for the mining, civil, geotechnical and agricultural engineering industries. 3. Collaboration with a team for the development of potential journal publications on this topic and the contributions made by the student. 4. The potential for future research projects at honours, Masters and PhD levels.

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Project Title: Repurposing Landfill Wastes for Sustainable and Flood Resilient Roads

Project supervisor/s and contact details	Dr Hannah Seligmann Hannah.seligmann@unisq.edu.au
School/Centre affiliation	School of Engineering
Additional information	This project is aimed at either a 2nd year or 3rd year Civil Engineering student. The student will need to have basic skills in analysis in excel and be available to do on-campus experimental work in either Springfield or Toowoomba. The student will be trained in experimental design and investigation throughout the duration of this project.

Project description	The Queensland road network is the longest in Australia, comprised of 226,000 km of Council and State-owned roads. One third of Queensland is situated on expansive clay soils; in particular, black cotton soil, which is commonly found in rural areas of Queensland. Black cotton soil undergoes significant volume changes when exposed to water. This shrink and swell behaviour of the soil is problematic for road construction and can cause premature failure and increased maintenance costs, particularly in areas prone to flooding.
	Project Aim: In this project you will develop innovative subgrade improvement techniques from current waste material including fly-ash products, waste glass and fibreglass. This will be achieved by crushing the waste materials to powder form and adding to expansive Queensland subgrades as a replacement to lime stabilisation.
	Project Activities: The activities that will be conducted as part of this investigation include the following:
	• Conduct a literature review into the relevant Australian and QLD standards for subgrade stabilisation
	• Conduct an experimental investigation into the performance properties of stabilised samples. This will be predominantly include:
	    o 4- day soak CBR
	    o Shrinkage
	    o Atterberg limits
	    o Moisture absorption
	• Contribute to a journal paper that summarises key findings.

Future research activities	This project can be extended further into an Honours research project which will open the opportunity to transfer the gained knowledge and experience to future research activities including a Master's or PHD program of research.
Project location	The successful candidate will be required to work at Springfield or Toowoomba campus for the duration of the project with opportunities to work with other students, research and industrial partners. Some aspects of the project including the literature review and data analysis may be able to be completed off campus from the candidate's home. This would need to be negotiated with the supervisory team.
Time commitment	This project involves the equivalent time commitment to a 2-day week 10-week intensive R and D project. This project may partially assist engineering students tyring to meet their work placement requirements.
Benefits for successful candidates	The successful candidate will gain experience working in a collaborative research environment and with researchers from different disciplinary backgrounds. Skill development will include: • Understanding of road subgrade and road stabilisation techniques used in industry • Preparation of a literature review • Data collection and data analysis • Experimental design and testing • Opportunity to meet and engage with industry partners and other interested stakeholders.

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Project outcomes	The results of this project are anticipated to provide useful information that is required to address the issue of black cotton subgrades in Queensland. Data from the project may also be used in publishing high quality journal articles. The successful candidate will be a co-author on these outputs.

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Project Title: Utilization of Glass Waste in Environmentally Friendly Grout Mixtures

Project supervisor/s and contact details	A/Prof Ali Mirzaghorbanali ali.mirzaghorbanali@unisq.edu.au A/Prof Andreas Helwig andreas.helwig@unisq.edu.au Prof Polly Burey Polly.Burey@unisq.edu.au Dr Tristan Shelley tristan.shelley@unisq.edu.au Mr Hadi Nourizadeh Polly.Burey@unisq.edu.au
School/Centre affiliation	Institute of Advanced Engineering and Space Sciences/Centre for Future Materials School of Engineering /School of Agriculture and Environmental Science/Centre for Future Materials/SIMPLE team
Additional information	This project can be conducted by 2nd and 3rd-year students of Civil Engineering discipline. It will be advantageous if the candidate knows how to use Excel for data analysis.

Project description	This project is intended to investigate the mechanical properties of amended grout products mixed with waste materials using compression testing machines. Initially, amended grout samples are cast by replacing cement for various percentages of waste-to-cement ratios ranging from 1 to 5%. Samples then are cured for different curing time intervals (1, 7, 14, 21 and 28 days), and tested for determination of Uniaxial Compressive Strength, Elastic Modulus in Compression and Shear strength.
	The student will be involved in the following activities:
	    1. A Literature review on mechanical properties of amended grout products,
	    2. An experimental study on the mechanical properties of amended grout for various curing time intervals,
	    3. Preparing a test report
	    4. Presentation of project outcomes to the School, Centre and/or industry.
	All the testing equipment and materials are currently available at the School of Engineering. The findings will be presented to the wider community at the Resource Operators' Conference.

Future research activities	This project can be extended further into an Honours research project with the potential for the candidate to go onto future research activities including a Masters or PhD project.
Project location	The successful candidate will be required to work at the Toowoomba or Springfield campus for the duration of the project as there are opportunities to work with other students, researchers, and industrial partners. Some aspects of the project, including literature review and data analysis, may be completed off campus from the candidate's home. This would need to be negotiated with the supervisory team.
Time commitment	This project involves the equivalent time commitment to a 3-day week 10-week intensive research and development project. This project may partially assist engineering students trying to meet their work placement requirements.

Benefits for successful candidates	The successful candidate will gain experience working in a research team where researchers from different backgrounds work together in a collegial environment.
	Skill development may include:
	  • How to carry out a systematic literature review,
	  • How to plan research studies,
	  • How to cast small-scale concrete samples for testing,
	  • How to use Engineering testing equipment,
	  • A general understanding of safety and risk assessment in Engineering,
	  • Data analysis using Excel,
	  • Report preparation and submission
	Student may have the opportunity to attend in Resource Operators' Conference in Feb 2024.

Project outcomes	This project will lead to a better understanding of amended green grout applications in various conditions. An experimental equation will be developed based on the

	collected experimental data to model the strength of amended grout in relation to various Engineering parameters. Findings will be presented at Resource Operators' Conference in FEB 2024.

School of Humanities & Communication

Project Title: Project Title: Australian Sympathisers of Rhodesia, 1965-1979

Project supervisor/s and contact details	Associate Professor Jayne Persian jayne.persian@unisq.edu.au
School/Centre affiliation	School of Humanities and Communication
Additional information	This project is best suited for UniSQ Bachelor of Arts students in their third year (or equivalent in part-time or dual degrees) of studies. As the project focuses on History, a candidate from that discipline is preferred. The ideal candidate will have: • Developed research skills appropriate for advanced undergraduate studies, including familiarity with library and database research. • Strong skills in critical thinking and evaluation. • Good written and verbal communication skills. • Good attention to detail. • Ability to work as part of a team. • Ability to work independently (under supervision).
Project description	In 1965, the white minority government of Rhodesia proclaimed independence from Britain, to preserve the economic and politics interests of white settlers. The Rhodesian regime, led by Prime Minister Ian Smith and his right-wing Rhodesian Front government, rapidly became an international pariah, facing economic sanctions and diplomatic isolation. This research will focus on far-right ideological solidarities between Australia and Rhodesia during this period, focusing on the transnational white solidarities that emerged in support of the right-wing Rhodesian regime. At the heart of this research is how Australian right-wing groups expressed solidarity with Rhodesia during its period of isolation. The student will: • Conduct and write up a systematic literature review. • Conduct primary research using the National Library of Australia's Trove database. • Conduct archival research using electronic archival documents sourced by the supervisor.
Future research activities	The successful applicant can expect that the skills and outcomes from the completed research project will be directly transferable to an Honours thesis project and to Higher Degree Research in a relevant field of study including History.
Project location	The research required to complete the agreed project can be primarily undertaken online using databases that are publicly available and those to which UniSQ Library provides access, as well as archives to which the supervisor will provide access. The researcher will participate in supervision and skills training sessions with the supervisor in-person (Toowoomba campus) or via Zoom, as required.
Time commitment	An investment of 1 – 2 days per week for the 10-week duration of the scholarship program is required.
Benefits for successful candidates	In participating in this research project, the student will develop skills in: • Conducting and writing a literature review. • Conducting primary research using an online database. • Conducting archival research. • Collaborative research. These skills will be beneficial for moving into postgraduate study and are also transferable skills sought by employers. The student's work will be acknowledged as a genuine contribution to a potential high impact publication.

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Project outcomes	Depending on the researcher's program of study, the participation in the Undergraduate Scholarship Program may be eligible for course credit, to be negotiated with the relevant Program Director. The project can be extended into a final year research project or HDR research.

Project Title: Project Title: Ginan: A literary Speculative Fiction project

Project supervisor/s and contact details	Dr Maria Arena maria.arena@unisq.edu.au Dr Nike Sulway nike.sulway@unisq.edu.au
School/Centre affiliation	School of Humanities and Communications
Additional information	The 3rd year student, who will have demonstrated a sustained record of high achievement in 2nd and 3rd year CWR courses and a community-of-practice orientation, will conduct a benchmarking and viability study whose goal is to evaluate the requirements for establishing a sustainable online literary Speculative Fiction 'journal'. The research will also, potentially, form the basis of a scholarly publication, for which the student would be invited to participate as a co-author with the research team. In the long-term, the scoping/benchmarking research will lead to the establishment of an online 'journal' that will provide research and publication opportunities for the successful student, and for others within, and beyond, the School of Humanities and Communication.
Project description	As part of a larger project aimed at establishing UniSQ as *the* place for students wishing to write and research Speculative Fiction in Australia, the Creative Writing team are working towards establishing an online Speculative Fiction literary journal. While the project is called a 'journal', the project is more wide-ranging than a traditional journal and may include additional services and activities, such as public lectures, training, and networking. The successful recipient of the Undergraduate Research Scholarship will work with the research team to conduct initial benchmarking and sustainability research, looking at similar projects published/hosted by regional organisations. The student will be involved in identifying, analysing, and comparing various models for the 'journal', as well as identifying potential industry and community stakeholders and allies, and potential funding models and opportunities.
Future research activities	Future research activities arising from the student's involvement in the project could include developing the research project in *HAC3001:The emerging professional*. The project will also prepare the student for completing a CWR Honours project by extending their research skills and developing partnerships with potential supervisors. There is potential for the student to grow their engagement in the project into an editing and publishing-based Honours project, or a Creative writing project.
Project location	Toowoomba and/or online.
Time commitment	2 days per week over 10 weeks, plus one hour per week for consultation with the supervisory team.
Benefits for successful candidates	The student will work closely with the research/supervision team to develop their research skills and will engage with other students involved in research and writing projects, thus expanding their research networks and increasing their confidence as researchers. The successful student researcher will be invited to share in presenting the research findings at a School Research Symposium, and (potentially) to contribute as a co-author to writing and publishing a scholarly article based on the research findings. In the long term, there is potential for the successful student to be involved in the ongoing development of the journal, including opportunities for professional development (in publishing and editing) as well as in both scholarly and professional writing and research.
Project outcomes	The research and findings of the successful student will be used to inform the ongoing project of establishing a sustainable literary Speculative Fiction journal, published by the Creative Writing team (staff and students). The journal, while in development and once established, will provide further research, writing, and publishing opportunities for HDR students, staff across a range of disciplines at

	UniSQ, and national and international researchers with an interest in Speculative Fiction.

Project Title: Shakespeare's Cultural Geographies

Project supervisor/s and contact details	Professor Laurie Johnson laurence.johnson@unisq.edu.au
School/Centre affiliation	School of Humanities and Communication Centre for Heritage and Culture
Additional information	Applicants should have completed ENL3009, ENL2005, or THT1001, with a result of Credit or higher, or should be able to provide evidence of equivalent knowledge.
Project description	An opportunity exists for an outstanding undergraduate researcher to contribute to an international research project studying how environment or geography shaped cultural innovation in Shakespeare's theatre. The successful candidate will study several early modern English plays by Shakespeare or his contemporaries, focused on how these plays might have been changed for performances in different locations. The research required for this project builds on skills the student will have acquired in their undergraduate studies but will also involve a suite of new skills in theatre history that will be taught through one-on-one training with Professor Johnson. These skills will include transcription of early modern archival documents, reading key historical source texts to construct a vocabulary of early modern playing culture, and developing knowledge of early modern stage directions and performance technologies. The major outcome of the project will be a publishable co-authored article or chapter targeted to a major journal like Early Theatre or for inclusion in a book published in the Anthem Studies in Cultural Geographies (on which Professor Johnson is a consulting editor).
Future research activities	The successful applicant can expect that the skills and outcomes from the completed research project will be directly transferable to an Honours thesis project and to Higher Degree Research in a relevant field of study in English Literature, Cultural History, or Theatre History.
Project location	The research required to complete the agreed project can be primarily undertaken online using databases to which UniSQ Library provides access (principally, the EEBO-TCP suite, Adam Matthews Digital resources, Cambridge Core) and those to which Professor Johnson can provide access (such as Folger LUNA Digital Image Collection and the Shakespeare Birthplace Trust). The researcher will be welcome to conduct this research on campus and to participate in supervision and skills training sessions with Professor Johnson in-person or via Zoom, as required.
Time commitment	It is expected that the project can be completed with a maximum investment of 2 days per week for the 10-week duration of the scholarship program. This 10-week program does not need to be undertaken in ten consecutive weeks and the dates of commencement and completion may be negotiated by the successful applicant, depending on course commitments during the T2 and T3 calendar in 2024. Ideally, the researcher will commit to 10 hours of training time (one hour per week for the duration of the project). In addition to the this, the supervisor will be available for a further minimum of 10 hours of consultation, collaboration, and supervision at times to be negotiated based on initial progress.
Benefits for successful candidates	The researcher's work will be acknowledged as a genuine contribution to a potential high impact publication, and the researcher will be provided with valuable opportunities to network directly with Professor Johnson's international research partners as well as with the global network of professional and research organisations at his disposal, including the Australian and New Zealand Shakespeare Association, the Shakespeare Association of America, the Shakespeare Institute (Stratford, UK), the Shakespeare Birthplace Trust, the Folger Shakespeare Library (Washington DC), the Museum of Shakespeare (London), the Museum of London Archaeology, and more. The researcher will also be invited to attend research seminars of the School of Humanities and Communication and in discussions with current HDR candidates. Skills that will be developed in training with Professor Johnson may include but are not limited to working with archives and archivists online, early modern palaeography

	and skills in understanding early typography, transcription from secretary hand, expanding interdisciplinary knowledge about Shakespearean drama (including knowledge of early regulatory frameworks, business models of early modern playing companies, and the administration and governance of playhouses, playing, and print).
Project outcomes	Depending on the researcher's program of study, the participation in the Undergraduate Scholarship Program may be eligible for course credit, to be negotiated with the relevant Program Director. Upon successful completion of the project, the researcher will have the opportunity to continue to work with Professor Johnson to write up the research as a publishable co-authored essay in an international journal or book. This offer extends beyond the completion of the project but is provided as a long-term outcome of the research in keeping with the disciplinary norms in English Literature and cognate fields.

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School of Health and Medical Sciences

Project Title: A Low-Cost, Objective, and Automated System for Movement Screening Using Artificial Intelligence (AI) and Markerless Motion Capture

Project supervisor/s and contact details	Dr Patricio Pincheira patricio.pincheira@unisq.edu.au Dr Ben Hoffman ben.hoffman@unisq.edu.au Prof Stephen Bird - stephen.bird@unisq.edu.au
School/Centre affiliation	School of Health and Medical Sciences Centre for Health Research
Additional information	The project is more suited to a current 2nd year student. This project can be approached from two perspectives. If the student has skills or a strong interest in programming, mathematics, machine learning, or data science, the focus will be on algorithm testing, data processing pipelines, and refining AI-based pose estimation. If the student's background is in biomechanics, exercise physiology, or clinical rehabilitation, the work will involve applying movement-screening tools, interpreting functional data, and translating insights into injury prevention or performance enhancement. Regardless of the focus, the student will gain experience in both technical and applied aspects, with tasks tailored to their skills and career goals.
Project description	Movement screening is an effective tool for identifying movement limitations and/or dysfunction related to strength deficits, muscle imbalances, and compensatory movement patterns. However, traditional approaches can be expensive, require specialised equipment, and rely heavily on subjective observation. This project aims to test a low-cost, objective, and automated system for movement screening using artificial intelligence (AI) and markerless motion capture technologies. Through video recordings from affordable cameras and open-source pose-estimation techniques, we will quantify movement patterns in a variety of settings—ranging from clinical rehabilitation to recreational and performance contexts—without the need for extensive expert supervision. By correlating traditional clinical or sport-related test metrics with biomechanical metrics such as kinematics and kinetics, we aim to provide a more comprehensive understanding of an individual's movement strategy and potential areas of limitation or risk.
Future research activities	Depending on the student's background and interests, future research could involve developing more advanced AI models, conducting longitudinal studies with diverse populations, or undertaking in-depth clinical or sport-specific trials.
Project location	On-Campus (Ipswich or Toowoomba, as appropriate): Training in data-collection methods, occasional lab-based assessments, and team meetings. Off-Campus/Online: Processing and analysing video data and writing up findings can largely be performed remotely.
Time commitment	The scholarship runs during Trimester 3, beginning at the start of September 2025 and finishing in mid-November 2025. The student should be prepared to commit 2 days per week for the 10-week period. Specific scheduling details will be arranged in consultation with the supervisor(s).
Benefits for successful candidates	• Practical AI and Data Analysis Experience (if choosing the AI/Engineering Focus): Learn to use open-source pose-estimation tools, write or adapt code (e.g., Python, MATLAB), and handle large datasets for advanced movement analysis. • Applied Biomechanics and Movement Science Experience (if choosing the Sport Science/Allied Health Focus): Conduct hands-on testing in a lab environment, interpret biomechanical data, and use insights to inform injury prevention or sport-performance interventions. Professional Development: Develop project management, problem-solving, and critical-thinking skills that are highly valued in both academic and industry settings.

	Foundation for Higher Research Degrees: Build knowledge and experience that can feed directly into an Honours project or other postgraduate programs.
Project outcomes	By the end of the scholarship, the student will have gained hands-on experience with an AI-driven markerless motion capture system, collected preliminary data, and understood how these data correlate with clinical or sport-specific tests in relation to relevant biomechanical outcomes. They will have enhanced their practical skills in AI-based pose estimation and data processing, and demonstrated how these methods can inform injury prevention and performance assessments. Furthermore, the student will produce a concise research report or presentation communicating the project's methodology and findings, thereby gaining valuable data science and analytical skills for a future career.
	In addition, by attending research symposiums and meetings within the university, the student will be exposed to the broader research culture, facilitating an appreciation of diverse fields of study and research-design approaches, and further developing their capacity to undertake research in the future.

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Project Title: A scoping review of the qualitative research methodologies and methods used in health professions education research

Project supervisor/s and contact details	A/Professor Priya Martin priya.martin@unisq.edu.au
School/Centre affiliation	School of Health and Medical Science
Additional information	The ideal student for this project needs to have the willingness to learn about this topic and review processes and be able to work well with the team. Some experience with literature searching would be advantageous, but not mandatory.
Project description	A/Prof Martin is leading a scoping review on the qualitative research methodologies and methods used in health professions education (HPE) research. This review brings together an international team with researchers from UniSQ, JBI (previously Joanna Briggs Institute), and the UK. **Project Background:** Health professions education (HPE) research employs diverse methodologies to explore complex educational phenomena. Quantitative approaches currently dominate in this field. As the HPE research topics are broad, the field needs openness to diverse ontological and epistemological assumptions and methodologies. As such, there is a need to better understand and use qualitative methodologies in HPE research ensuring rigour and best practice approaches. No systematic or scoping reviews exist that have synthesized evidence on qualitative methodologies used in HPE research. The proposed review will address this gap and provide practical recommendations for HPE researchers to enhance the field using well-designed, rigorous qualitative approaches.
Future research activities	The review is currently in the title and abstract screening phase. The role of the UG research student would be to help with full text screening, data extraction and mapping. They will have weekly supervision with A/Prof Martin and be able to participate in project team meetings with the co-reviewers. Therefore, they will have opportunities to strengthen their oral and written communication skills, teamwork, and academic writing. They will be a co-author on the peer-reviewed paper, thereby setting them up well for a future HDR study.
Project location	A/Prof Priya Martin is based in Toowoomba. If the student is not based in Toowoomba, components of the activity can be carried out online/remotely.
Time commitment	1-2 days/week over 10 weeks, between May and November 2025. This is not a fixed pattern and student's availability can be accommodated to enhance flexibility to allow student participation.
Benefits for successful candidates	The student will have exposure to working with a team of experts in health professions education, qualitative research and review methodology. They will experience first-hand ways of working with a diverse team from different time zones. As the review follows the conduct guidelines from JBI, the student will be working with one other reviewer from the team in all phases of the review and will have the opportunity to strengthen their collaborative working skills. The student will have the opportunity to be a co-author on the manuscript arising from this work, which will be a valuable opportunity for their CV.
Project outcomes	The following outcomes are anticipated: 1. At least one peer-reviewed journal article. 2. At least one conference presentation. 3. Practical guidelines to inform future qualitative approaches in HPE research.

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Project Title: More than a feeling: Exploring the coverage of compassion & empathy in allied health program curricula

Project supervisor/s and contact details	Prof Bernice Mathisen Bernice.mathisen@unisq.edu.au Dr Dolly Baliunas dolly.baliunas@unisq.edu.au Dr Katy Caynes katy.kaynes@unisq.edu.au Dr Gavin Austin gavin.austin@unisq.edu.au
School/Centre affiliation	School of Health and Medical Sciences Centre for Health Research (CHR)
Additional information	This opportunity is recommended for 2nd or 3rd year students from a health-related discipline, such as psychology or speech pathology. It is expected that the student has a strong interest in holistic person-centred health care.

Project description	Empathy is the ability to understand and share the feelings of another person. Compassion goes a step further than empathy. It involves not only understanding and sharing another person's feelings but also having a desire to help alleviate suffering by doing something about it.
	Empathy and compassion are fundamental qualities for healthcare professionals, a fact underscored by a growing body of research and a deeper understanding of its impact on person-centred care and provider well-being. While the concepts of empathy and compassion have always been valued in healthcare, compassion as a formal topic in healthcare education is relatively new.
	This project aims to explore the integration of compassion and empathy within the current allied health programs at UniSQ. By examining existing curricula, teaching methods, and student experiences, the project seeks to identify strengths and areas for improvement in fostering these essential qualities among future healthcare professionals.
	The overarching project aims are to:
	• Assess current curriculum: Evaluate the extent to which compassion and empathy are currently included in the allied health (AH) programs.
	• Identify best practice: Research and identify effective teaching methods and activities that promote compassion and empathy in AH education.
	• Gather student perspectives: Conduct surveys and interviews with students to understand their experiences and perceptions regarding compassion and empathy in their clinical and theoretical courses.
	• Develop recommendations: Propose actionable recommendations for enhancing the inclusion of compassion and empathy in the allied health programs.
	This project involves the following research opportunities for the student:
	• Being involved in a scoping review of:
	  o Australian/Australasian professional standards, codes and guidelines for allied health professions for coverage of compassion and empathy
	  o content specifically around compassion and empathy in current allied health curricular at UniSQ.
	• Assisting with preparing research proposals and developing ethics applications relating to the above project
	• Co-designing the protocol for qualitative interviews and quantitative surveys, to be conducted with students and faculty of allied health programs at UniSQ
	• Analyse the collected data to identify trends, gaps, and opportunities for improvement.

Future research activities	This project has the potential to be extended into an Honours project or HDR project (Master or PhD). The research skills developed by the scholar via this opportunity will also be relevant and transferrable to future research and/or clinical pursuits.

Project location	The work required for this project primarily uses a computer and can, therefore, be located where best suits the student. The student will be invited to attend online Teams meetings with other academics and/or stakeholders, where relevant and appropriate to do so. Meetings with stakeholder/staff will be at Ipswich campus only.
Time commitment	1-2 day(s) are required per week for 10 weeks duration
Benefits for successful candidates	The student will learn a variety of research skills: • Literature searching and synthesis. • Academic writing for multiple purposes • Knowledge creation via the research process. • Group and other teamwork skills. • Content knowledge in healthcare curricular on compassion and empathy • Stakeholder engagement. • Research translation. • Other research management skills.
Project outcomes	Project outcomes may include: • Gaining experience in research protocol development • Participating in preparation of a publication relating to scoping review(s) (and be an author) • Gaining experience in working in an interprofessional research team • Opportunities to present research findings at conferences.

Project Title: Neurophysiological Adaptations Underpinning the Contralateral Repeated Bout Effect

Project supervisor/s and contact details	Dr Ben Hoffman: ben.hoffman@unisq.edu.au Dr Patricio Pincheira: patricio.pincheira@unisq.edu.au Nicole Jones: nicole.jones@unisq.edu.au
School/Centre affiliation	School of Health and Medical Sciences Centre for Health Research
Additional information	The project is suitable for either a 2nd year or 3rd year. The student must have an interest in biomechanics research.
Project description	Performing a bout of unaccustomed exercise (e.g. starting a new gym program) that includes lengthening muscle contractions results in exercise-induced muscle damage (EIMD). EIMD is characterised by a transient loss in force and delayed onset of soreness in the muscles in the hours and days following the exercise bout. After exposure to EIMD, the muscle adapts and if the same bout of exercise is performed using the same muscle group days, weeks or even months later, the symptoms of EIMD are reduced. This is known as the repeated bout effect. Remarkably, this protective effect partially transfers to the contralateral limb. That is, following a bout of exercise that induces muscle damage on one limb, the same muscle on the other side of the body can be partially protected from EIMD effects despite not performing an initial bout of lengthening exercise. This is known as the contralateral repeated bout effect. The mechanism of the contralateral repeated bout effect is not well understood. It is speculated that a centrally mediated mechanism is involved as a localised, mechanical change to the muscle-tendon structure is unlikely since the muscle does not experience physical trauma in an initial bout of exercise prior to becoming protected. One centrally mediated hypothesis is that the cortical control of the contralateral muscle adapts following exposure to muscle damage using the ipsilateral muscle. However, there have been no investigations regarding the changes in cortical activation with the contralateral repeated bout effect. Understanding the neural mechanism of the contralateral repeated bout effect may help us to better understand how exercise adaptations transfer between limbs. This will guide exercise prescription in contexts where one limb is impaired or immobile. Hence, the project aims to investigate cortical responsiveness of the triceps surae muscle group in the presence of the contralateral repeated bout effect. We will use transcranial magnetic stimulation to stimulate the motor cortex of individuals before and after repeated bouts of single-legged heel-drops. Changes in the size of responses evoked by transcranial magnetic stimulation will help to determine if there is a change in the cortical control of the triceps surae in the presence of the contralateral repeated bout effect. The project focuses on understanding exercise adaptation mechanisms to inform exercise prescription and adherence, aligning with the UniSQ flagship research area of Health. This project is the final project for PhD student, Nicole Jones. The student will work alongside Nicole to collect and analyse cortical responsiveness data. The student will be trained in experimental and data analysis procedures. After the data is analysed, the student will provide a short report indicating the findings. The student will also attend Sport and Exercise Science discipline research meetings and School of Health and Medical Sciences research symposia (monthly).
Future research activities	The skills and knowledge gained in this project can be extended into future research. The understanding of exercise-induced muscle damage and the skills developed can be applied in an Honours research project in the 3rd and 4th years of the BSEH program. The student will be able to use these skills in a subsequent project to recruit participants and collect original data to investigate the neural contributions to the protective contralateral repeated bout effect. These experimental and data analysis skills will be advantageous for a student pursuing a HDR in any research area where biological data (e.g. force, pressure, position, electromyography) is captured.

Project location	The data collection sessions will take place at the Sport and Exercise Research Laboratory, room C107, Ipswich Campus. These will occur sporadically based upon participant availability. Data analysis and meetings can be completed online / off-campus.
Time commitment	The project will commence in May to align with the data collection period of the PhD student. The project will require a commitment of 2 days a week for the 10-week period.
Benefits for successful candidates	The student will gain skills in collecting and analysing neurophysiological data and develop expertise in experimental laboratory procedures and specialised research software (e.g. LabChart, MATLAB). This experience will develop data science / analysis skills that will be beneficial for a future career in exercise and sport science. The student will also expand their knowledge of exercise-induced muscle damage and the contralateral repeated bout effect. Through data collection sessions, the student will experience ethical human experimentation in a biomechanics research laboratory. The student will be trained in safe laboratory procedures and work collaboratively with Sport and Exercise Science staff and HDR students. The student will be integrated within the research culture within Sport and Exercise Science and the School of Health and Medical Sciences by attending research symposiums and meetings. This will foster an appreciation of different research fields and research design approaches, developing their capacity for future research.
Project outcomes	The data that is collected and analysed by the student will contribute to the study being led by the PhD student (Nicole Jones). This data will be included in a journal article publication.

Project Title: The investigation of neuropathological changes in experimental stroke models

Project supervisor/s and contact details	Dr Lin Kooi Ong lin.ong@unisq.edu.au Dr Prajwal Gyawali Prajwal.Gyawali@unisq.edu.au
School/Centre affiliation	School of Health and Medical Sciences Centre for Health Research
Additional information	This project is best suited for a 2nd or 3rd year student who is undertaking biomedical science or medical laboratory science. Experience with biomedical techniques (eg Western blotting, ELISA) would be advantageous, but not essential.
Project description	Stroke is strongly associated with cognitive decline and dementia. Indeed, significant impairment in at least one cognitive domain was reported in approximately 70% of stroke survivors who achieve full clinical recovery. Whilst stroke in brain regions involved in cognition (i.e. hippocampus) are rare, impaired cognition, decreased hippocampal function and hippocampal neurodegeneration are common after stroke. There is emerging evidence suggesting that stroke triggers a wave of secondary damage that causes the progressive and inexorable loss of brain tissue at sites connected to the area damaged by the initial infarction, a phenomenon termed as secondary neurodegeneration. Our studies to date have focused on characterising the pathophysiology and cognitive deficits associated with secondary neurodegeneration in rodent (mouse and rat) stroke models and providing evidence of delayed injury in regions remote to the infarct following stroke, in a clinically relevant ovine model. Notably, we have shown that cortical stroke is associated with persistent neuronal loss, blood brain barrier dysfunction, neuroinflammation and accumulation of neurotoxic proteins at secondary neurodegeneration sites, including the hippocampus, out to 84 days post-stroke in a mouse model. Leveraging on these findings, we have established research collaboration with national researchers to access "biobank" tissue samples. Critically, we have established key biomedical methodologies in Toowoomba campus. In this project, a student will support the analysis of neuroinflammation, neurodegeneration and cerebrovascular remodeling using biomedical techniques and will also be involved in critical appraisal of post-stroke hippocampal secondary neurodegeneration and cognitive impairment.
Future research activities	The research skills that the candidate will develop over the course of this project are transferable to future research activities. This project could be extended to an Honours, Masters, or PhD project.
Project location	The project is located on the USQ Toowoomba campus. Some aspects of the project (e.g. literature review) may be able to be completed off campus from the candidate's home.
Time commitment	The project will run for 10 weeks and will typically involve the student to commit 1.5 days a week to the project. This includes meeting with project supervisors. Please note the candidate may be required to commit to working up to 3 days a week at various points in the project when performing various biomedical assays.
Benefits for successful candidates	The candidate will be involved with the following activities and will learn skills in: • Sample handling and processing • Biomedical science techniques such as western blotting and ELISA • Experimental design • Data acquisition and analysis • Systemic review The candidate will have the opportunity to present the findings at research symposium within the University. The candidate will also undertake workshops related to research, as part of the expected time commitment.

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Project outcomes	This project will provide critical insights to the spatial and temporal neuropathological changes in various experimental stroke models will advance our knowledge in secondary neurodegeneration after stroke and link to post-stroke cognitive impairment. The project will result in a one co-authored publication in a peer-reviewed scholarly journal.

School of Law and Justice

Project Title: Dicey Down Under: Mapping the Citation and Use of Private International Law Treatises in Australian and New Zealand Courts

Project supervisor/s and contact details	Dr Sarah McKibbin Sarah.McKibbin@unisq.edu.au Professor Reid Mortensen reid.mortensen@unisq.edu.au
School/Centre affiliation	School of Law and Justice
Additional information	This project is best suited to a law student in their second or third year of study. It would be advantageous, but not essential, for the student to have studied LAW3463 (Cross-Border Litigation) or have a demonstrated interest in private international law. The ideal candidate will have: • Developed appropriate research skills, including familiarity with legal databases (eg, AustLII, Westlaw, Lexis+, HeinOnline) • Strong analytical and critical thinking abilities • Excellent attention to detail for systematic data collection • Good written communication skills for drafting research findings • Ability to work both independently under supervision and as part of a research team
Project description	An opportunity exists for an outstanding LLB student to contribute to an important research project examining the influence of institutional writers on the development of private international law in Australasia (Australia and New Zealand). Building on Dr McKibbin's existing research into English judicial citation practices, this project will analyse how Australian and New Zealand courts have engaged with key institutional writers in private international law, including Joseph Story, John Westlake, A V Dicey, Geoffrey Cheshire, and Peter Nygh. The successful candidate will: • Conduct systematic research using legal databases to identify and analyse judicial citations of major institutional writers in Australian and New Zealand courts • Document and classify different judicial uses of institutional writings using established frameworks • Contribute to developing a comprehensive dataset of citation practices • Assist in preparing a co-authored publication examining the findings The project aims to better understand how institutional writers have shaped private international law doctrine in Australasia and compare this with patterns observed in English courts.
Future research activities	The successful applicant can expect that the skills and outcomes from this research project will be directly transferable to an Honours thesis or HDR research project. The empirical research methods and analytical frameworks developed through this project will provide a strong foundation for future academic research in private international law or related fields.
Project location	The successful candidate can conduct this research at the Toowoomba campus or online. They must be prepared to participate in weekly supervision and skills training sessions with the supervisory team (Dr McKibbin and Professor Mortensen) in-person or via Zoom. Access to legal databases will be provided through UniSQ's Library.
Time commitment	The project involves the equivalent time commitment of two days per week over the 10-week duration of the scholarship program, including: • Weekly one-hour supervision meetings • Independent research time using legal databases • Regular data analysis and writing sessions • Participation in School of Law and Justice research activities The supervisory team will be available for additional consultation as needed.

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Benefits for successful candidates	By working closely with the supervisory team, the successful candidate will: • Develop advanced legal research skills using major legal databases • Gain experience in empirical legal research methods • Learn systematic approaches to analysing judicial decisions • Build expertise in private international law doctrine • Network with private international law scholars through the Australasian Association of Private International Law of which Professor Mortensen is the Secretary • Develop academic writing skills through co-authorship • Present research findings at the School of Law and Justice's Research Seminar Series.
Project outcomes	This project will result in: • Development of a comprehensive dataset documenting Australasian judicial citation practices in private international law • A minimum of one co-authored publication in a peer-reviewed scholarly journal examining the influence of institutional writers in Australasia • A co-authored research presentation at either the School's Research Seminar Series or to the Australasian Association of Private International Law.

Project Title: Emerging Trends in Human Rights Case Law in Queensland: How the Human Rights Act 2019 is Applied

Project supervisor/s and contact details	Dr Nicky Jones Nicky.Jones@unisq.edu.au
School/Centre affiliation	School of Law and Justice
Additional information	The successful candidate will be a 2nd-year or later student in a Bachelor of Laws degree program, whether the LLBP or a combined degree. It will not be sufficient to have an interest in human rights without a background in Law and legal research and writing. Students who have successfully completed LAW3405 Human Rights and Anti-Discrimination Law are encouraged to apply.
Project description	This project focuses on the ways in which the *Human Rights Act 2019* (Qld) ('HRA') is interpreted in Queensland courts and tribunals. The successful student may choose one human right protected under the HRA (ss 15-37), or more than one if rights are related. The student will research case law to find and review decisions in which this rights provision is cited and relied on by Queensland courts and tribunals. The student will review the legal reasons which discuss the human right to identify themes and draw conclusions about the right in the Queensland community, where appropriate, or to identify the circumstances in which this human right is limited under s 13 and related provisions. Alternatively, the candidate may choose an operative provision which creates a human rights protection mechanism under the HRA to conduct the same research and review the resulting case law. The student's choice of HRA provision will be discussed with the supervisor, who will make the final decision about whether this provision is appropriate for the scale and scope of this project.
Future research activities	This project may be extended into an Honours or Master of Laws research project. Legal research skills and human rights knowledge that the student will develop over the course of the project are transferable to future research projects and activities. After this project has finished, the student will work with the supervisor to develop and write one article to be published in an appropriate journal or similar publication. The candidate will be a co-author on the article.
Project location	The candidate may work on this project online or at Ipswich campus.
Time commitment	The successful candidate must commit at least 4 hours per week to the project for its duration (10 weeks). The starting date for the project can be negotiated with the supervisor.
Benefits for successful candidates	The successful candidate will have the opportunity to work with an experienced research academic and to meet and discuss the project and associated research with other academics in the School of Law and Justice. The candidate will receive training to develop academic research and writing skills and will learn about the scope and operation of human rights law in Queensland. The candidate's skills development may include: • How to conduct legal research • How to interpret legislation. • How to prepare a comprehensive literature review; and • How to prepare drafts of an academic research paper.
Project outcomes	After this project has concluded, the student will work with the supervisor to develop and write one research article to be published in an appropriate journal or similar publication. The candidate will be a co-author on the article.

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School of Mathematics, Physics & Computing

Project Title: Is My Data Safe? Data Protection for Business from Attackers

Project supervisor/s and contact details	Dr. Di Wu di.wu@unisq.edu.au Prof. Ji Zhang ji.zhang@unisq.edu.au Prof. Xiaohui Tao xiaohui.tao@unisq.edu.au
School/Centre affiliation	School of Mathematics, Physics and Computing
Additional information	This project can be conducted by 2nd and 3rd year undergraduate students from computing and business discipline. It is expected that the candidate has some IT literacy and foundation (having taken some introductory computing courses), be proficient in the use of Microsoft Office Software and display an enthusiasm for artificial intelligence and its applications.
Project description	**Background**: In the modern business landscape, data analytics plays a crucial role in decision making and strategy development. However, ensuring data privacy and security has become a growing concern for organizations. Federated learning, a decentralized machine learning approach, offers a solution by training models on distributed data without sharing sensitive information. This project aims to explore the application of federated learning to business analysis while preserving data privacy. **Objective**: To investigate the feasibility and effectiveness of federated learning in business analysis by comparing it to traditional data analysis methods. Students will develop a deeper understanding of federated learning, its potential applications, and the challenges it poses.
Future research activities	It is anticipated that this project has the potential to evolve into an Honours-level or even a Higher Degree by Research (HDR)-level program. It has the potential to offer sustained opportunities for the candidate to engage in research within this area, possibly including machine learning models, programming, and large-scale system development. The expertise and experiences acquired by the candidate throughout this project are highly adaptable, enabling them to apply IT and AI technologies across various high-impact domains effectively.
Project location	This project does not have any on-campus research component that must be fulfilled. The candidate is able choose their preferred location, either online or attending one of the three UniSQ campuses, to complete the project. The supervisory team will maintain close contact with the candidate and will provide supervision through the research period via Zoom meetings and/or face-to-face meetings as appropriate.
Time commitment	The project will run for 10 weeks and can be undertaken in either T2 or T3, 2024. The candidate will be required to commit to working up to 2 days per week for the duration of the project. The candidate has discretion in deciding which days of the week they will work on the project.
Benefits for successful candidates	This project will provide the following benefits to the candidate. Specifically, this project will provide the candidate with: • Hands-on exposure to IT and AI technologies and an opportunity to engage in an interdisciplinary research project to solve a real high impact problem. • Hands-on experience in real-life large-scale data collection, storage and cleaning along with a good understanding of various potential data quality issues and possible solutions. • Experience in conducting a systematic literature review with critical thinking, summarizing and analytic skills. • Initial experience with various classification models, frameworks and their implementation. • Experience in working in a highly collaborative research environment with researchers from different disciplinary expertise and backgrounds in computer science, artificial intelligence, material, and waste management.

Project outcomes	This project will lead to following outcomes: 1. This project will help us better understand the requirements and the features of business data. 2. A literature review surveying the existing federated learning methods in business data analysis and systems will be produced. 3. Sufficient data will be collected which will be potentially used to train the machine learning classification models. 4. A paper manuscript will be written based on the project outcome. Depending on the contribution, the candidate will be listed as a co-author or acknowledged in the final publication(s).

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Project Title: Literature review on 'Attacks and defences in machine unlearning for tabular data'

Project supervisor/s and contact details	Dr. Zhaohui (Linda) Tang zhaohui.tang@unisq.edu.au
School/Centre affiliation	School of Mathematics, Physics and Computing
Additional information	
Project description	**Introduction:** While machine learning is widely used or to be used in almost all aspects of our modern society, its nature of leveraging a huge amount of data from users has drawn privacy concerns from researchers, industry practitioners and users themselves. The rights for their sample/s to be forgotten in machine leaning training, terms as 'machine unlearning', have become an urgency in safeguarding user privacy who has contributed data samples during the past machine learning training. **Problem Statement:** With machine unlearning proposed to enhance privacy-preservation in machine learning, attacks and defenses have been studied too. While most of the existing works on machine unlearning attacks and defenses have focused on image and text data, this project is to review literature which focus on or mention machine unlearning attacks and defenses in tabular data. **Students are expected to:** • Gather literatures on 'attacks and defenses in machine unlearning for tabular data' • Read, understand and discuss with supervisor on literatures • Draft a literature review paper for publication purpose
Future research activities	Identify one challenging question from the literature review and work on that
Project location	Toowoomba campus or online
Time commitment	1-2 days per week (depending on the student's availability), lasting for 10 weeks in total between anytime from May 2025 – November 2025.
Benefits for successful candidates	Get updated on the status of the hot topic of machine unlearning.
Project outcomes	A draft of write-up on the literature review, or a draft paper (aimed for submission for publication) as best.

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Project Title: Observational exoplanet data analysis

Project supervisor/s and contact details	Dr Chelsea Huang chelsea.huang@unisq.edu.au A/ Prof Duncan Wright duncan.wright@unisq.edu.au Dr George Zhou george.zhou@unisq.edu.au
School/Centre affiliation	School of Mathematics, Physics and Computing Centre for Astrophysics
Additional information	This project can be conducted by 2nd or 3rd year students. Familiarity with Python programming would be advantageous. Working with the team on-campus at Toowoomba Campus is preferred, but not essential. There are 3 sub projects available. One student will be allocated per project.
Project description	Exoplanetary science is moving forward at a fast-paced thanks to large space telescope missions led by NASA and ESA such as Kepler, the Transiting Exoplanet Survey Satellite, the James Webb Space Telescope, and the Gaia mission. UniSQ's own ground-based telescopes at Mt Kent observatory take data that supports the TESS mission. The three projects proposed are: • High precision transit follow-up of Earths and super-Earths with the Minerva Australis array at Mt Kent • Identification and characterisation of new planets from NASA's TESS mission or newly released archival Kepler data. • Searching for small planets suitable for atmospheric studies in new datasets from NASA's TESS mission This research project will take place in the Centre for Astrophysics and will involve being mentored by our PhD students and working with the Astrophysics team. The project will train the students in accessing and analysing exoplanet data from the space missions mentioned above and from Mt Kent observatory. Each student will also do an extension of this work on one of the three projects listed above. The aim is to develop the student's capability in accessing space telescope data, and to build on their knowledge of how to develop and conduct an exoplanetary research project.
Future research activities	This research project is targeted at preparing the students for further research, in exoplanetary science or another area of astronomy.
Project location	Ideally the project will be conducted at the Toowoomba campus, but this is not essential. To get the most out of the project, the students need to have regular meetings with the supervisors and casual discussions with other students, and this is more likely to occur in an in-person setting. There will be some visits to Mt Kent observatory, but most of the work will be done at Toowoomba campus. An excellent candidate who is unable to come to the campus in person will still be considered.
Time commitment	The projects will run for 10 weeks from after the end of the 1st trimester 2025 i.e. starting May 19th, 2025. Students are expected to have 1-2 days of workload per week.
Benefits for successful candidates	The students will develop a familiarity with the type of space telescope missions that are currently impacting astronomical research. They will understand how to search through literature on a topic to develop and refine a research project. They will learn how to access the space data and use it to address a scientific question. Finally, they will work in a research environment and collaborate with other research students as well as the supervisory team.
Project outcomes	This is a research training project that has the primary aim of developing the skills of the participants in conducting astronomical research. The focused projects may allow for the students to achieve publishable results, depending on the project and the students' progresses.

School of Nursing and Midwifery

Project Title: Migrants' experiences of primary healthcare in rural/regional/remote Australia

Project supervisor/s and contact details	Professor Leah East Leah.East@unisq.edu.au Dr Ya-Ling Huang Ya-Ling.Huang@unisq.edu.au
School/Centre affiliation	Centre for Health Research School of Nursing and Midwifery
Additional information	This research opportunity is recommended for 3rd year undergraduate health students, with an interest in research. Preferably, the candidate has completed or enrolled in an undergraduate research unit/course. The preferred criteria will not limit the opportunity for a potential candidate who are interested in being part of this research program.
Project description	Inequities in health care and outcomes persist both within Australia and globally, disproportionately affecting diverse populations. Communities affected by various social, cultural, commercial, and environmental factors experience higher rates of communicable and non-communicable diseases and often face barriers to accessing culturally safe health care. The overarching aim of this project within the Health Equity and Health Disparities research group is to explore health disparities and social determinants of health among migrant populations within an Australian context. The specific aims include: 1. To map the existing evidence of primary health care needs of individuals from migrant backgrounds 2. To explore health disparities between rural and remote individuals to metropolitan counterparts 3. To explore the impact of the social determinants of health, health service use and health outcomes 4. To promote health equity and culturally responsive and inclusive health service This research program is based on evidence-based practice, with a scoping review which will be undertaken by mapping the existing evidence of primary health care needs of people from migrant backgrounds within a rural context.
Future research activities	This initial scoping review is the first initiative of the School of Nursing and Midwifery Health Equity and Health Disparities Research group. We envision the group as a collective will engage in multiple publications, grant applications and multiple research outcomes to enhance health equity across populations. An aim of the group is to enhance research team capacity, capability and growth, with several cross-collaborative streams already established and producing outcomes.
Project location	Toowoomba or Ipswich campus
Time commitment	The successful candidate will be required to work 1-2 days per week for 10 weeks under supervisor of the research team. Flexible working days and locations with the option to work remotely.
Benefits for successful candidates	This research program provides the following research opportunities for the successful candidate: • Being involved in a scoping review process i.e., literature update, screening, data extraction and drafting the results. • Learning critical appraisals and data synthesis of research articles. • Gaining knowledge associated with different research methodologies and associated strengths and weaknesses. • Learning academic writing for publication as an emerging researcher. • Being immersed in a real-world research environment, with an opportunity to make an impact in clinical practice, using evidence-based practice approach.

	• Building a foundation for postgraduate higher degree research study in the future.
Project outcomes	Publication in a high rank Q1 journal.

School of Psychology and Wellbeing

Project Title: Advancing Gender Affirming Health Care in Australia

Project supervisor/s and contact details	Dr Daniel Brown daniel.brown@unisq.edu.au Prof Amy Mullens amy.mullens@unisq.edu.au A/Prof Annette Brömdal annette.bromdal@unisq.edu.au
School/Centre affiliation	School of Psychology and Wellbeing, School of Education, and Centre for Health Research, Health Equity Research Theme
Additional information	This opportunity is recommended for 2nd or 3rd year psychology students with an interest in clinical, health, or social psychology. This opportunity will focus on a program of research including a community forum exploring publicly accessible and available models of gender affirming surgery in QLD. This project will expose the undergraduate student to opportunities spanning interdisciplinary research methodologies, issues that affect priority communities (e.g., trans, gender-diverse and non-binary communities), and a focus on advancing health care access in Australia. While it is encouraged, the student does not need to have a special interest in trans, gender diverse, or non-binary people. It is expected that the student has an interest in the intersection of health care and social justice.
Project description	Trans and gender-diverse adults who seek to alleviate their gender dysphoria via gender-affirming surgery face a range of barriers in Queensland (QLD) and Australia more broadly. Despite calls by important global authorities such as the United Nations and the World Health Organisation to increase publicly funded access to healthcare services, many trans and gender-diverse adults cannot access affordable public services in QLD. These structural challenges can have lasting negative consequences on the health and wellbeing of trans and gender-diverse peoples, which already experience disproportional ill-health. In QLD, healthcare and advocacy groups identified this gap of medical services over 30 years ago, creating the Gender Health Service in Brisbane. Despite this clear gap of service and the QLD human rights imperative of non-discriminatory access to healthcare – "every person has the right to access health services without discrimination" (Queensland Human Rights Commission), little has been done to understand the ongoing barriers and opportunities to equitable healthcare access for trans and gender-diverse adults engaging in or contemplating gender-affirming surgery in QLD. The student will assist the team across several research opportunities that have developed from a community forum exploring publicly funded models of gender affirming surgery in QLD. The specific tasks for the project will be matched in part to the student's interest, experience, and goals. Current opportunities include: 1. Data-analysis of archival data from a community forum. 2. Literature research and synthesis to guide identifying current trends and gaps in the literature to inform arising research outputs (e.g., publications, presentations, industry reports) and future funding submissions; and 3. Assist with preparing research proposals and writing ethics proposals for subsequent phases of research.
Future research activities	It is expected that a range of ongoing research activities will develop from the current program of research. This project has potential to be extended into final year research projects for WIL, Honours, or HDR projects (Master's or PhD). Please speak to the supervisory team if this is of interest to you. The research skills developed through this project will be highly relevant and transferable to a range of future research or clinical activities.
Project location	The work required for this project primarily uses a computer and can, therefore, be located where best suits the student. The student will be invited to attend online team meetings with other academics and/or stakeholders, where relevant and appropriate to do so.

Time commitment	It is expected that a minimum of 1 – 2 days per week is needed. Weekly supervisory meetings with a supervisor or the supervisory team will be negotiated with the student based on availability of the research team and other stakeholders (typically Monday, Wednesday, Thursday, or Friday).
Benefits for successful candidates	The student will learn a variety of research skills: • Literature searching and synthesis • Qualitative data analysis • Academic writing for multiple purposes (e.g., peer-reviewed articles, industry reports). • Knowledge creation via the research process. • Group and other teamwork skills • Content knowledge in health and wellbeing, social justice, health care access, gender-minority communities, and other interdisciplinary intersections. • Stakeholder engagement • Research translation • Other research management skills.
Project outcomes	Overall, it is expected that the student with meaningfully contribute to the advancement of a larger program of research that seeks to advance gender affirming health care in Australia. This may include: • A completed analysis of a community forum. • An industry report to the QLD government and community stakeholders about the community forum, and recommendations for action. • A literature review identifying research gaps in the barriers and facilitators to public models of gender affirming surgery in QLD. • A list of recommended future research. • Completed ethics applications. Ultimately, the research team aims to understand the barriers and opportunities for publicly available and accessible gender-affirming surgery for trans, gender-diverse, and non-binary people in QLD, and the student will contribute to the research processes and outputs (e.g., grant submissions, conference presentations, industry reports, journal articles) that contribute to this aim.

Project Title: Enhancing health and wellbeing outcomes for vulnerable communities: A community food security approach

Project supervisor/s and contact details	Dr Aastha Malhotra Aastha.Malhotra@unisq.edu.au Assoc Professor Julie King Julie.King@unisq.edu.au Assoc Professor Ros Darracott Ros.Darracott@unisq.edu.au
School/Centre affiliation	School of Psychology and Wellbeing
Additional information	This project is best suited for 2nd and 3rd year students who are enrolled in Social Work and Human Services. However, considering the cross-disciplinary nature of the topic, we welcome students from other disciplines as well (i.e., Creative arts and Wellbeing, Psychology). The ideal candidate will have: • Strong written, verbal communication and organisation skills. • Ability to work independently (under regular supervision). • Reasonable understanding of MS Word. • Experience with systematically searching for, interpreting and synthesising research articles would be highly desired, but certainly not mandatory. • Availability to meet for regular supervision with the project team.
Project description	This project contributes to an on-going and established research agenda that encompasses projects integrating health and wellbeing outcomes for marginalised individuals and communities with innovative community initiatives. This project focuses on food-based community initiatives, including social enterprises, that aim to address the rising cost of living and improve health and wellbeing outcomes for Queenslanders, including families with children. In consultation with a local peak body, the research will focus on examining the capacity building of local neighborhood centres to support vulnerable individuals and families by enhancing food security, reducing social isolation, improving social determinants of health and promoting sustainable and inclusive food systems within local communities. Example project activities include strengthening community capacity, social enterprises, community gardens and cooking classes, shared meals and workshops, use of local produce, among others. A key outcome of this project includes the preparation of three to five case studies that capture information associated with improved health and wellbeing outcomes, increased support for vulnerable groups, and enhanced social inclusion and connectedness among community members. Case studies will incorporate mixed methods data collected through interviews and focus groups, among other tools, with staff and project participants from each case study. To aid the above, current student opportunities include contributing to: 1. the research methodology and theoretical framework. 2. the ethics application including interview and focus group prompts to inform pre-determined metrics and subsequent phases of research. 3. conducting and writing up a background literature review. 4. project administration and preliminary data collection (where possible). Note that the student will be mentored through the processes of research design, collaborative research processes, and publication strategies.
Future research activities	The results of this part of the project will be developed into a peer-reviewed publication with the student being a co-author on the research output. Furthermore, this project can be extended into a final year research project, an Honours thesis or higher degree by research (HDR) research project.
Project location	The work required for this project primarily uses a computer and can, therefore, be located where best suits the student. The student will be invited to attend online team meetings with other academics and/or stakeholders, where relevant and appropriate to do so. A Teams site will be set up for the project to store all data and files.
Time commitment	The duration of the project is 10 weeks. The student will be expected to work 8 hours (approx. 1 day) per week. This will include a weekly meeting with the project team. While the exact starting date can be negotiated with the supervision team for this project, there is a staging process (for example, the ethics application approval needs

	to be secured before data collection can commence) and it is expected that allocated responsibilities will be completed between May and November 2025.
Benefits for successful candidates	In participating in this research project, the student will develop skills in: • Conducting a literature review • Research design • Resource management • Knowledge creation via a collaborative research process • Content knowledge in health and wellbeing, social justice, community development, social innovation and other intersecting areas • Working with industry stakeholders • General project management skills These skills will be beneficial for moving into postgraduate study but are also transferable skills sought by employers. The candidate will have the opportunity to develop a publication track record and collaborate with other students, researchers, and industrial partners.
Project outcomes	Overall, it is expected that the student with meaningfully contribute to research centred on projects integrating health and wellbeing outcomes for marginalised individuals and communities with innovative community initiatives, including social enterprises. Project outcomes may include: • A completed ethics application. • Hands-on experience in research planning, recruitment and data collection. • Co-authored presentation and peer-reviewed publication.

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Project Title: Green Parenting: Understanding parenting in times of climate change

Project supervisor/s and contact details	Dr Carolina Gonzalez carolina.gonzalez@unisq.edu.au
School/Centre affiliation	School of Psychology and Wellbeing
Additional information	This project is best suited for psychology students in their third year. Some interest in parenting, childhood, and early prevention is highly recommended. Students are required to have good critical thinking and written communication skills.
Project description	In the last decades, there has been a growing interest in mitigating the impact of climate change on people's lives. Having fewer children is one of the most effective ways to benefit the environment (Wynes & Nicholas, 2017); however, supporting young families can also have a positive impact in the world of ageing population (Ofori-Asenso et al., 2018). This research introduces the concept of green parenting, which refers to those behaviours that parents engage in as role models when raising their children in an environmentally friendly way. UNICEF (2021) has provided some suggestions for parents to raise their children in an environmentally friendly way, keeping in mind that these behaviours are also consistent with their children's developmental stage. However, limited research has been conducted to understand parents' pro-environmental attitudes and behaviours. This ongoing project, initially supported by the 2023 UniSQ Capacity Building Grant, aims to understand parents' pro-environmental attitudes and behaviours when raising their children in an environmentally friendly way in Australia. It will provide a framework for green parenting that will inform future research and public policy. This project includes the following research activities: 1. Data extraction and summary of the findings of a scoping review of the international literature about green parenting to identify definitions, theoretical models, measures, and key variables of interest. 2. Data collection and analysis of a national survey to identify parents' environmental attitudes and behaviours and gaps in the support available. 3. Preparation and analysis of interviews with parents to identify facilitators and barriers to pro-environmental behaviours. 4. Preparation of grant proposal. The student will assist with: • Scoping review: Data extraction, write-up of results, and update of literature review and systematic searches. • Survey: Participant recruitment, ethics reports, and data analysis. • Interviews: Interview organization, conducting interviews, data analysis. • Grant application: Literature review, concept brief. • Project management: Minute-taking of team meetings and meetings with stakeholders, project data management.
Future research activities	This project will prepare the student to continue working with the supervisor on an Honours project in a related area with the potential to expand this work towards an HDR degree (e.g., PhD) and grant applications.
Project location	The project work can be done online.
Time commitment	The student will need to commit to 2 days per week for 10 weeks. The proposed dates are 1st May to 31st July 2025. However, there is some flexibility about dates as it is also possible that the successful student will work in blocks of time depending on personal availability.
Benefits for successful candidates	The student will acquire foundational skills for research required for an Honours or HDR degree. The student will be able to develop knowledge and skills in: • Conducting systematic literature reviews, • Pre-registering study protocol (for scoping review and empirical study), • Project management skills, • Ethical review process, • Quantitative and qualitative research,

	• Critical thinking skills, • Liaison with relevant stakeholders, • Academic writing for publication, and • Science communication (optional, through conference presentations). These skills are desirable for a future research career and transferable into the workforce.
Project outcomes	This project will involve as outcomes, if applicable: • One co-authored publication in a high-impact peer-reviewed journal; and • One co-authored conference presentation.

Project Title: Improving Care for Children with Type-1 Diabetes

Project supervisor/s and contact details	Dr Govind Krishnamoorthy govind.krishnamoorthy@unisq.edu.au Dr Arlen Rowe arlen.rowe@unisq.edu.au Prof. Sonja March sonja.march@unisq.edu.au
School/Centre affiliation	Centre for Health Research; School of Psychology and Wellbeing
Additional information	
Project description	Children and adolescents with Type 1 Diabetes (T1D) in regional areas face significant challenges, including higher rates of diabetes-related distress, mental health difficulties, and hospitalisations compared to their urban counterparts. It's essential to understand their unique needs and find ways to improve both their physical and mental wellbeing. The UniSQ Center for Health Research (CHR), in collaboration with West Moreton Health Pediatric Diabetes Services (Queensland Health), are co-designing and testing an adaptive digital mental health intervention for children and adolescents with T1D in regional Queensland. This project aims to create a tailored, integrated system that provides routine psychological screening, personalized support modules, and streamlined referrals to the existing multidisciplinary healthcare team. The team will work to address a gap in regional healthcare, and work to make mental health support more accessible. This project offers exciting opportunities for students to contribute to a cutting-edge initiative with the potential to improve the lives of young people with T1D and their families. Students engaged in this project could be involved in: **Conducting literature reviews** of models of care for T1D for children and adolescents in urban and regional areas. - Conducting data and record audits: To understand trends in service access, and utilisation and its impact on outcomes. **Data Analysis and Interpretation:** Analyse quantitative and qualitative data to evaluate the implementation and effectiveness of the digital intervention, identify areas for improvement, and understand user experiences. **Dissemination and Community Engagement:** Contribute to the dissemination of project findings through presentations, reports, and community engagement activities, raising awareness of the importance of integrated mental health support for young people with T1D. **Team Research Activities:** Participate in team meetings, workshops, and seminars, collaborating with experienced researchers and healthcare professionals and gaining real-world experience in applied health research. By participating in this research, students will develop valuable skills in systematic reviews, digital health, co-design, implementation science, and chronic disease management, while making a meaningful contribution to the health and wellbeing of young people in regional Australia.
Future research activities	The project is ongoing, the team also have other projects starting and will continue this work into the future.
Project location	Ipswich, but can be flexible
Time commitment	Investment of 1-2 days per week is required for the 10-week duration of the program
Benefits for successful candidates	Students will have the unique opportunity to participate in applied research designed to directly benefit young people with Type 1 Diabetes, contributing to improved wellbeing and healthcare accessibility in regional Queensland.
Project outcomes	Project outcomes will include: - Gain experience in recruitment and data collection in clinical, applied projects - Gain experience in data analysis - Participate in preparation of a publication (and be an author) - Gain experience in working in a research team - Opportunities to present on the research.

Project Title: Investigating the relationship between Social Media and Gestational Diabetes

Project supervisor/s and contact details	Dr Carol du Plessis carol.duplessis@unisq.edu.au Prof Amy Mullens amy.mullens@unisq.edu.au Assoc Prof Jessica Marrington Jessica.Marrington@unisq.edu.au
School/Centre affiliation	School of Psychology and Wellbeing
Additional information	This project is best suited for psychology students in their second or third year. Students should ideally have an interest in maternal health and in health psychology. Strong organizational skills are required.
Project description	This study forms part of a larger project (with an interdisciplinary project team) investigating Gestational Diabetes in Australia. This project examines lived experiences of GDM to understand the impact of information provision from health-focused social media on decision-making regarding testing, diagnosis, and condition management. GDM is a common condition diagnosed in pregnancy that has implications for immediate and long-term health of both mother and infant (AIHW, 2019). Rates of GDM have been steadily rising in Australia (AIHW, 2019) with nearly 18% of pregnant people diagnosed in 2021-22 (AIHW, 2024). While GDM testing is relatively straightforward and recommended for all pregnant women in Australia (Nankervis, et al., 2014), there is an emerging trend of scepticism, particularly in the popular press, towards the accuracy of diagnosis and challenging the need to be tested, as this is viewed as part of an over medicalisation of pregnancy (Barton, 2023; Glasziou, & Doust, 2023; Langford, 2023). This is a potential harmful trend as untreated GDM can have significant health risks for both infants and mothers. For this project, the student will be assisting with: • Conducting a scoping review on international academic literature in relation to representations of GDM in social media. The aim of the scoping review will be to identify what is currently known about this topic. The student will be assisting with activities such as data extraction, write-up of results and writing the literature review. • Researching representations of GDM among Australian and New Zealand influencers on social media, with a particular focus on the platforms of Instagram, TikTok and YouTube. Indicative activities include identify key influencers, collecting data and converting data into a manageable format (e.g. transcriptions), and qualitative data analysis such as thematic analysis. • Assisting with the management of an existing online survey focusing on GDM in Australia. This will include tasks such as assisting in participant recruitment, managing mailing out of gift-cards and other administrative tasks. • Assisting with other project related tasks (e.g. ethics amendments or grant applications) as are appropriate within the designated scope and timeframe.
Future research activities	It is expected that a range of ongoing research activities will develop from this program of work. These include a possible Honours and PhD with the project team. The research skills developed during this project are highly transferable to other future research or clinical activities.
Project location	Online. Supervisory team is based at Ipswich Campus, but we are happy to conduct all supervision online unless the student prefers an occasional in person meeting.
Time commitment	The project will run for 10 weeks, starting on the 26th of May and ending on the 1st of August 2025. There is flexibility regarding days and times, but a minimum commitment of approximately 10 hours per week is required. There will be weekly meetings with a member of the supervisory team at a time to be negotiated with the student. Students may also choose to attend other online meetings of the larger research team, which includes 2 honours students currently working on related projects.
Benefits for successful candidates	The student will learn a variety of research skills: • Literature searching and synthesis.

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	- Qualitative data analysis. - Academic writing - Knowledge creation via the research process - Group and other teamwork skills - Working with archival data sets
Project outcomes	The student's work will meaningfully contribute to a larger body of work looking at women's experiences of GDM on social media. This will include contributing to three potential Q1 Articles (scoping review, GDM and Social Media Influencers, GDM Survey) and potential inclusion as a co-author on all three articles depending on level of contribution. Through so doing it will enhance knowledge concerning women's experiences of GDM in Australia and may influence further collaborations with government bodies and regulators.

Project Title: Sexual healthcare for LGBTQI+ people after cancer

Project supervisor/s and contact details	Dr Daniel Brown daniel.brown@unisq.edu.au Dr Pierre Röscher pierre.roscher@unisq.edu.au
School/Centre affiliation	School of Psychology and Wellbeing School of Health and Medical Sciences Centre for Health Research
Additional information	This opportunity is recommended for 2nd or 3rd year psychology/allied health students with an interest in health psychology, sexual medicine, or cancer treatment and survivorship.
Project description	Unfortunately, sexual healthcare is often a neglected aspect of a cancer survivor's care, despite the increased risk of poor sexual wellbeing post-cancer. This is particularly problematic for LGBTQI+ people given minority populations diagnosed with cancer are already more likely to experience disproportionately higher levels of distress and poorer quality of life compared to their non-LGBTQI+ counterparts. We are currently undertaking several studies including a scoping review of sexual healthcare for LGBTQI+ people after a cancer diagnosis/treatment as well as preparing for interview with cancer survivors to understand more about their experiences. The student will assist the team across these projects in tasks that are, where possible, matched with the student's interest, experience, and goals. Current opportunities include: • Data extraction • Literature searching and synthesis • Participant recruitment
Future research activities	It is expected that a range of ongoing research activities will develop from the current program of research. This project has potential to be extended into final year research projects for WIL, Honours, or HDR projects (Master's or PhD). Please speak to the supervisory team if this is of interest to you. The research skills developed through this project will be highly relevant and transferable to a range of future research or clinical activities.
Project location	The work required for this project primarily uses a computer and can, therefore, be located where best suits the student. The student will be invited to attend online team meetings with other academics and/or stakeholders, where relevant and appropriate.
Time commitment	It is expected that a minimum of 1 – 2 days per week is needed. Weekly supervisory meetings with a supervisor or the supervisory team will be negotiated with the student based on availability of the research team
Benefits for successful candidates	The student will have the opportunity to learn a variety of research skills including: 1. Learning about systematic literature reviews/scoping review 2. Data extraction 3. Searching and synthesising literature 4. Knowledge creation 5. Research project management 6. Research ethics 7. Participant recruitment methodology 8. Knowledge of psycho-social interventions in oncology 9. Healthy equity issues
Project outcomes	It is expected that the student will meaningfully contribute to a program of research that seeks to explore sexual health care after cancer for LGBTQI+ people. This may include: • Systematic presentation of current known research • A scoping review • A list of recommended future research • Successfully recruited a range of participants. The research team seeks to best understand the current state of the literature in this area of research and wants to plan a future program of research that best supports cancer survivors. We are looking for someone who wants to contribute to these aims.

Project Title: Transforming Child and Adolescent Mental Health through Digital Supports

Project supervisor/s and contact details	Prof Sonja March Sonja.March@unisq.edu.au
School/Centre affiliation	School of Psychology and Wellbeing Centre for Health Research
Additional information	Blue card would be required prior to starting
Project description	1 in 7 young people will experience a mental health disorder, and 50% of adulthood mental illness begins before the age of 14. Therefore, it is crucial to provide support to children and adolescents early, before they turn into lifelong difficulties. The Innovative Mental Health Solutions Research Team in the Centre for Health Research (and School of Psychology and Wellbeing) have been codesigning and testing digital tools, assessments and interventions for children and adolescents for the last 20 years. They have delivered the Momentum Hub platform, a digital self-help platform for child and adolescent mental health. This project has codesigned a fully integrated digital assessment and treatment platform for child and adolescent anxiety, depression and related difficulties (sleep, substance use, healthy lifestyles) with young people, parents and clinicians. This platform has been live since April 2024, along with another digital program (BRAVE). The team have also collected mental health data on child and adolescent mental health during the COVID pandemic as part of this project. Students engaged in this project could be involved in: - Helping to disseminate the platform via social media, professional networks, schools and health services, including development of resources and webinars - Assist in collection of data via digital programs and qualitative interviews with participants - Data monitoring and analysis of BRAVE and Momentum, potentially including process evaluations within cohorts of users (e.g. regional families, female/male users, those with severe/mild mental health challenges) - Assist in preparation of outputs from our existing datasets relating to mental health during COVID, BRAVE and Momentum (quantitative and qualitative) - Team research activities such as weekly meetings, symposia, webinars etc (work with our team of research fellows and research assistants and experience real world applications of research!)
Future research activities	The project is ongoing, the team also have other digital mental health projects starting and will continue this work into the future. The team hold external funding to conduct child and adolescent mental health research and there will be ongoing opportunities for students to be involved either in placements or student projects.
Project location	Springfield, but can be flexible
Time commitment	Maximum of 2 days per week for the project duration of 10 weeks
Benefits for successful candidates	Students will be exposed to a highly thriving and successful applied research team at UniSQ who hold several external research grants. The team are world leaders in digital mental health and are leading the field in research for child and adolescent mental health. Students will have the opportunity to get involved in applied research, designed to work with young people and help improve mental health. There are opportunities to learn about both qualitative and quantitative methodologies, get involved in data collection and help disseminate digital tools. The student will have opportunities for ongoing involvement should they be interested.
Project outcomes	Project outcomes will include: - Gain experience in recruitment and data collection in clinical, applied projects - Gain experience in data analysis - Participate in preparation of a publication relating to the Momentum or

	BRAVE projects (and be an author)
	• Gain experience in working in a research team
	• Opportunities to present on the research.

Project Title: Understanding the effects of social media on youth with mental health concerns

Project supervisor/s and contact details	Dr Riley Scott riley.scott@unisq.edu.au Dr Vicki Dallinger vicki.dallinger@unisq.edu.au Dr Govind Krishnamoorthy govind.krishnamoorthy@unisq.edu.au
School/Centre affiliation	School of Psychology and Wellbeing
Additional information	
Project description	Youth with mental health concerns in the digital age face unique challenges in their personal recovery journey. Social media use has become ubiquitous, potentially offering both benefits and drawbacks for young people. Recently, legislative restrictions on the access to social media amongst children have been introduced. However, there are research gaps in our understanding of the impact of social media on the mental health of youth – especially those deemed vulnerable to the negative impact of social media. UniSQ researchers from the School of Psychology and Wellbeing are conducting research to understand the impact of social media on how youth experience and recover from mental health concerns. In particular, the research will investigate positive and negative influences of social media on: (a) developing a sense of connectedness; (b) maintaining hope for the future; (c) developing a positive identity, (d) finding meaning and purpose and (e) learning skills to feel empowered to manage one's mental health and wellbeing. This project offers exciting opportunities for students to contribute to a cutting-edge initiative with the potential to improve the lives of young people with mental health concerns. Students engaged in this project could be involved in: • **Conducting literature reviews** examining how children and adolescents in urban and regional areas use social media and any links to mental health. • **Qualitative and quantitative data collection, analysis, and interpretation**. • **Team Research Activities:** Participate in team meetings, workshops, and seminars, collaborating with experienced researchers and healthcare professionals and gaining real-world experience in applied health research. By participating in this research, students will develop valuable research skills, while making a meaningful contribution to the health and wellbeing of young people.
Future research activities	The project is ongoing. The team also have other projects starting and will continue this work into the future.
Project location	Ipswich, but can be flexible
Time commitment	Investment of 1 – 2 days per week is required for the 10-week placement.
Benefits for successful candidates	Students will have the unique opportunity to participate in applied research designed to directly benefit young people, contributing to improved wellbeing and digital mental health supports for youth across Queensland.
Project outcomes	Project outcomes will include: • Gain experience in recruitment and data collection in clinical, applied projects • Gain experience in data analysis • Participate in preparation of a publication (and be an author) • Gain experience in working in a research team • Opportunities to present on the research.

Project Title: Wellbeing and resilience in rural, remote and regional social enterprises in: Supporting the Service Providers

Project supervisor/s and contact details	Dr Aastha Malhotra aastha.malhotra@unisq.edu.au Prof Amy Mullens amy.mullens@unisq.edu.au
School/Centre affiliation	School of Psychology and Wellbeing
Additional information	This project is best suited for 2nd and 3rd year students who are enrolled in Social Work and Human Services or Psychology. However, considering the cross-disciplinary nature of the topic, we welcome students from other disciplines as well (i.e., Creative arts and Wellbeing, Business). The ideal candidate will have: • Strong written, verbal communication and organisation skills. • Ability to work independently (under regular supervision). • Reasonable understanding of MS Word and Endnote. • Experience with systematically searching for, interpreting and synthesising research articles would be highly desired, but certainly not mandatory; and • Availability to meet for regular supervision with the project team.
Project description	This project contributes to an on-going and established research agenda that encompasses projects integrating health and wellbeing outcomes for marginalised individuals and communities with innovative community initiatives, including social enterprises. This project focuses on the wellbeing experiences of social purpose leaders. The nature of their work conducted is often demanding, typically involving supporting individuals from marginalised backgrounds who have experienced significant systemic challenges and traumatic experiences while balancing operational constraints and community expectations. This unique role can lead to psychosocial stress and reduced personal and professional resilience. This interdisciplinary project is bound by UniSQ Human Ethics Application: ETH2024-0095- Facilitating wellbeing and resilience for social enterprise leaders and their teams in rural, remote and regional Queensland and draws on thematic analysis of individual interviews and focus group data to examine specific psychosocial wellbeing challenges among social enterprise founders and leaders and; generate a complex and contemporary understanding of the current knowledge and access to wellbeing supports in regional, rural and remote areas. To aid the above, current opportunities include: 1. Co-identifying relevant research questions and theoretical frameworks. 2. Conducting and writing up a background literature review. 3. Engage and support data analysis - Specific areas of focus could include but are not limited to: barriers and enablers of hedonic/eudemonic wellbeing, biopsychosocial perspectives in the context of competing organisational demands. 4. Project administration and preliminary data collection (where possible). Note that the student will be mentored through the processes of qualitative research design, collaborative research processes, and publication strategies.
Future research activities	The results of this part of the project will be developed into a peer-reviewed publication with the student being a co-author on the research output. Furthermore, this project can be extended into a final year research project, an Honours thesis or higher degree by research (HDR) research project.
Project location	The work required for this project primarily uses a computer and can, therefore, be located where best suits the student. The student will be invited to attend online team meetings with other academics and/or stakeholders, where relevant and appropriate to do so. A Teams site will be set up for the project to store all data and files.
Time commitment	The duration of the project is 10 weeks. The student will be expected to work 8 hours (approx. 1 day) per week. This will include a weekly meeting with the project team. The exact starting date can be negotiated with the supervision team for this project, and it is expected that allocated responsibilities will be completed between May and November 2025.

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Benefits for successful candidates	In participating in this research project, the student will develop skills in: • Conducting a literature review • Qualitative research design • Resource management • Knowledge creation via a collaborative research process • Content knowledge in health and wellbeing, social justice, community development, social innovation and other intersecting areas • Working with industry stakeholders • General project management skills These skills will be beneficial for moving into postgraduate study but are also transferable skills sought by employers. The candidate will have the opportunity to develop a publication track record and collaborate with other students, researchers, and industrial partners.
Project outcomes	Overall, it is expected that the student with meaningfully contribute to research centred on projects integrating health and wellbeing outcomes for marginalised individuals and communities with innovative community initiatives, including social enterprises. Project outcomes may include: • A completed ethics application. • Hands-on experience in research planning, recruitment and data collection. • Opportunities to present on the research and potential co-authored peer-reviewed publication.

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School of Surveying and Built Environment

Project Title: Healthy active communities through citizen science and participatory planning

Project supervisor/s and contact details	Dr Anthony Kimpton anthony.kimpton@unisq.edu.au Prof Tracy Kolbe Alexander tracy.kolbe-alexander@unisq.edu.au
School/Centre affiliation	School of Surveying and Built Environment School of Health and Medical Sciences Centre of Health Research Centre of Heritage and Culture
Additional information	Have you ever wondered how your city, town, or neighbourhood places can influence your wellbeing? This project addresses a unique and innovative approach to help answer that question. This project is best suited for 2nd and 3rd year students from a broad range of disciplines, including: (1) urban and regional planning; (2) public health; (3) sport and exercise science; (4) civil engineering; (5) information technology; or (6) design programs although students from other disciplines are welcome to apply and demonstrate how their expertise aligns with the project aims.
Project description	The United Nations' 11th Sustainable Development Goal is "…cities of opportunities for all, with access to basic services, energy, housing, transportation and more" (UN 2020). This future requires infrastructure that not only meets our needs, but that increases the appeal of more sustainable choices such walking, cycling, public transport, and becoming more physically active. Indeed, the World Health Organisation ranks physical activity as the "best buy" for returns on public health (WHO 2022) yet only 22% of Australians achieved the recommended 150 minutes of physical activity per week in 2022 (WHO 2018; ABS 2025). This has prompted programs such as the Australian Heart Foundation's *Healthy Active by Design* program to improve the design of our built environment to make it easier for all Australians to lead heart-healthy lives (HF 2025). This is where we can help since citizen science and participatory planning enables residents to crowd map the barriers and facilitators for physical activity within their built environment and communicate these findings and propose solutions to their local council and elected representatives. To this aim, we are proposing "participatory geographic information system" or "PGIS" so that residents can explore, explain, and predict/model how planning, policy, and development of the built environment is impacting physical activity while also developing local community networks and social ties (Fagerholm et al. 2020). The aim of this project is to collate the current evidence on the role that crowdsourcing and PGIS can play in the built environment and physical activity. The student's role will include conducting a scoping review of the international research literature, domestic planning policy and practice, and crowd mapping services.
Future research activities	The project outcomes will include identifying knowledge and research gaps and establishing the foundations for a comprehensive literature review and the design principles for a PGIS that will engage communities in participatory planning that improves public health. This project is intended to prepare the student for continuing to work with the supervisors on an Honours project in a related area and that has capacity to extend towards a research Masters or PhD. The core code of this PGIS service is already developed and can be adapted to a range of community projects that align with UniSQ flagship areas including regional development, community health, and heritage management. This PGIS will have multiple benefits for UniSQ including strengthening ties with the community and reducing the overheads of collecting high quality qualitative and quantitative data for

	fostering research activity and collaborations that attract research funding and support communities.
Project location	Springfield or Ipswich Campus
Time commitment	10 weeks, one day per week
Benefits for successful candidates	The benefits for the student researcher will include mentorship in: • how to critically review research, policy, planning practice, and digital services • how to communicate to a research readership • how to scope and design a research project • how to manage and complete a research project to a schedule • fortnightly meetings with the research team to provide guidance, answer questions, and mentorship, and • opportunity to join HDR student meetings.
Project outcomes	The scoping review will be foundational for a comprehensive literature review that will be published in a leading international research journal. The student will be invited to coauthor this publication in acknowledgement of their research contributions.

Project Title: Mapping of Invasive Weed Species Using Drone-Based Multispectral Imaging

Project supervisor/s and contact details	Dr. Bikram Pratap Banerjee, SoSBE bikram.banerjee@unisq.edu.au Prof. Kevin McDougall, SoSBE Kevin.McDougall@unisq.edu.au Prof. Tek Maraseni, Centre for Sustainable Agricultural Systems (CSAS) tek.maraseni@unisq.edu.au
School/Centre affiliation	School of Surveying and Built Environment
Additional information	This project is suited for 2nd and 3rd-year undergraduate students in disciplines such as spatial science, remote sensing, geospatial engineering, environmental science, or a related field. Experience or coursework in GIS, remote sensing, image classification, or machine learning would be advantageous. The project is designed to be developmental in orientation, providing training in research methodologies rather than requiring extensive prior experience.
Project description	Mapping of Invasive Weed Species Using Drone-Based Multispectral Imaging Invasive plant species threaten biodiversity and agricultural productivity by displacing native vegetation. Drone-based remote sensing has emerged as a powerful tool for large-scale monitoring and classification of invasive weeds. This project will focus on classifying and mapping invasive weed species using high-resolution multispectral UAV imagery and machine learning techniques. The project will involve: • Utilizing existing UAV-acquired multispectral imagery for analysis. • Developing vegetation indices such as NDVI, SAVI, and GNDVI to enhance species differentiation. • Extracting textural features using Haralick metrics for advanced classification. • Applying and evaluating classification algorithms, including Random Forest, XGBoost, and Deep Learning models. • Assessing classification accuracy using standard metrics such as precision, recall, and overall accuracy. • Developing geospatial outputs such as classified maps and vegetation distribution models. This research will provide a scalable solution for environmental monitoring and contribute to more effective management strategies for invasive weed species. The project will integrate with existing research programs and align with ongoing initiatives in environmental monitoring.
Future research activities	This project has the potential to be extended into: • An Honours research project focusing on further refinement of classification techniques. • A Master's or PhD project exploring the integration of LiDAR and hyperspectral imagery for enhanced classification accuracy. • Collaborative industry projects for large-scale vegetation mapping.
Project location	The project will be conducted at the Toowoomba Campus for consultation and access to computer labs. The student will also have the flexibility to work remotely using their workstation for data analysis.
Time commitment	The expected commitment is 1-2 days per week for 10 weeks, aligning with the Undergraduate Research Scholarship guidelines. The schedule can be flexible based on student availability and project milestones. Weekly supervisory meetings (minimum 1 hour) will be required.
Benefits for successful candidates	• Hands-on experience with UAV-based remote sensing and image processing. • Exposure to machine learning techniques for geospatial classification. • Training in GIS software, Python for remote sensing, and cloud computing tools. • The opportunity to co-author research publications and present findings at conferences.

	• Networking opportunities with academics, researchers, and industry partners in spatial science and environmental monitoring. • Experience working in a structured research environment with clear milestones and developmental learning objectives.
Project outcomes	• A classified map of invasive weed species using multispectral imagery. • A comparative analysis of machine learning models for remote sensing classification. • A technical report summarizing key findings and methodologies. • Potential peer-reviewed publications in remote sensing and geospatial science journals.

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