

A large, abstract graphic element on the left side of the page. It features a white pentagonal shape at the top, which overlaps with a larger blue shape below it. The blue shape has a jagged, geometric edge. The text 'UTS welcomes the Women in STEM Decadal Plan' is overlaid on the blue shape in white. The background of the entire page is a photograph of a woman in a black blazer holding a smartphone, standing in front of a glass wall with some faint text visible through it.

# UTS welcomes the Women in STEM Decadal Plan

October 2019

# Contents

Introduction	2
Leadership: bringing UTS and the sector forward	3
Workplace culture: strategic investment driving change	6
Visibility: role modelling excellence and inclusion	8
Education and outreach: creating a pipeline for change	9
Evaluation: measuring our social impact	12

## ACKNOWLEDGEMENT TO COUNTRY

UTS acknowledges the Gadigal People of the Eora Nation and the Boorooberongal People of the Dharug Nation upon whose ancestral lands UTS stands today. We would also like to pay respect to the Elders, both past and present, acknowledging them as the traditional owners and custodians of knowledge for these lands.



UTS CRICOS 00099F 23109 OCT 2019

Images: Andy Roberts, Anna Zhu, Rebecca Garofolletti and Workplace Gender Equality Agency

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**UTS welcomes the opportunity to take up the challenge as an institutional *Women in STEM Decadal Plan* Champion. UTS is, and always will be, a diverse and inclusive university, committed to social justice and the economic, social and cultural prosperity of our community. Through our research, our graduates and our engagement in public debates, we aim to ensure a just and equitable society. We are proud of our research, outreach and strategic work to support diversity and inclusion in STEMM, and of the exceptional achievements of our female academics.**

The *Women in STEM Decadal Plan*, launched in April 2019, is a long-awaited strategic opportunity to address sector-wide structural barriers and support and enhance the efforts of individual institutions to invest in, support and retain women in STEMM areas. UTS contributed to the development of the Plan, which represents a significant contribution to the vital national discussion around the future of our STEM workforce, education and innovation agenda.

The UTS approach to gender equity is intersectional and inclusive, supporting our UTS 2027 Strategic Vision to be a leading public university of technology recognised for our global impact. Throughout this document we refer to STEMM disciplines and areas (science, technology, engineering, mathematics and medicine) rather than STEM (science, technology, engineering and mathematics) to emphasise that our approach encompasses workforce culture and pipeline skills underpinning medical research and allied health, alongside science and engineering. We pursue a positive model of Indigenous STEMM education and engagement as part of our approach to expanding the STEMM participation pipeline.



Below we outline UTS actions aligning with the *Women in STEM Decadal Plan* goals for:

- Leadership
- Workplace culture
- Visibility
- Education and outreach, and
- Evaluation



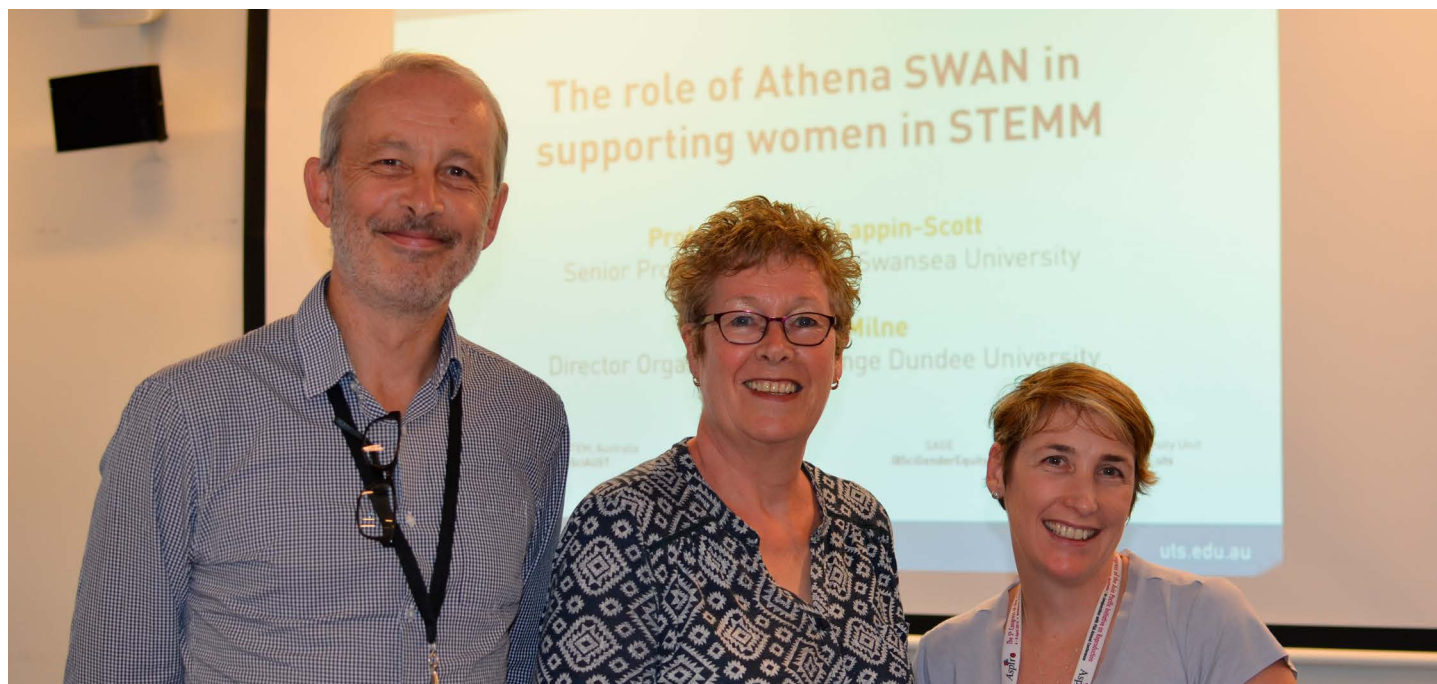
## Leadership: bringing UTS and the sector forward



**“UTS has a long culture of and commitment to inclusiveness, which we have worked very hard to support and foster. I know from experience the richness and energy that diversity contributes, not only to research and teaching, but also to the creation of productive and supportive workplaces.”**

UTS Vice Chancellor Attila Brungs

UTS has a longstanding commitment to leadership for gender equity and workforce diversity, as a Workplace Gender Equality Agency Employer of Choice since the inception of the award. UTS is a member of the **Equal Pay Day Alliance** and the UTS Vice Chancellor is proud to play a leadership role in the UTS community and more broadly as a **Workplace Gender Equality Agency Pay Equity Ambassador**. Gender equity and inclusion is built into corporate planning at UTS via Key Performance Indicators tracking the proportion of women in STEMM and across the University, and the proportion of women across the University in senior or leadership roles. The UTS 2027 Strategic Plan places social justice and inclusion at the heart of UTS.



### UTS Equal Futures: Athena SWAN

UTS has set an ambitious global Athena SWAN target of 40 per cent academic women in our STEMM areas by 2022, supported by an extensive four-year, whole-of-organisation action plan for gender good practice.

Following a two-year pilot supported by whole-of-university engagement, UTS received one of the first Australian Athena SWAN Bronze Award for gender good practice. The UTS Four Year Athena SWAN Action Plan is currently underway, project managed by the Centre for Social Justice and Inclusion.

Key leadership commitments to support Athena SWAN and the global target include:

- Strategic resourcing for the Equal Futures program under the leadership of the Provost, with sponsorship from the Assistant Deputy Vice Chancellor Research (Development)
- Setting up Faculty-based Equity and Diversity Committees to progress social justice and inclusion initiatives
- Creating a new Vice Chancellor's Social Justice and Inclusion Committee, chaired by the Provost, to oversee the action plan's integration into business as usual operations
- The Vice Chancellor provides updates about Athena SWAN and other inclusion strategies as part of staff events and cross-university communications

- On Equal Pay Day 2019, UTS announced a commitment of \$500,000 funding to tackle the gender pay gap in three faculties.
- In 2020, UTS will begin consultation toward a Gender Strategy, designed to broaden the benefits of Athena SWAN to non-STEMM areas within the University.

UTS has embraced the Athena SWAN pilot as a targeted, systematic, timely process to audit our gender practice, consult extensively with staff and formulate responsive, concrete actions to address women's under-representation in STEMM. At UTS the targeted STEMM areas are our Faculty of Science, Faculty of Engineering and IT, Faculty of Health and our School of Architecture.



### UTS ATAR adjustment factors for women

UTS is taking sector leading action to address the long-standing wide gender disparity in students applying for undergraduate courses in selected STEMM areas. From 2020, women applying for all undergraduate degrees in the University of Technology Sydney (UTS) Faculty of Engineering and Information Technology (FEIT) will receive **10 adjustment points on their Australian Tertiary Admissions Rank (ATAR)**. Women applying for a construction project management degree in the Faculty of Design, Architecture and Building (DAB) will also receive 10 adjustment points.

The initiative provides girls who are interested in Engineering and IT, who may miss out on a place because of demand for the degree, with the opportunity to study at UTS. This bold and disruptive initiative is expected to increase the proportion of women studying Engineering and IT by up to 8%, changing the student experience at UTS as well as engineering and IT industries for the future.

### Sector leadership on workforce targets for gender equity

To support whole of sector engagement with targets for gender equity, the UTS Centre for Social Justice and Inclusion hosted **Strategies for Success: Implementing Gender Workforce Targets in STEMM**, a full day symposium in July 2019. Around one hundred participants attended, representing thirty organisations from the higher education and research sector, the private sector, member organisations and peak bodies, and both NSW and Commonwealth government.

The symposium facilitated wide ranging discussion on workplace and pipeline issues implementation of gender and diversity workforce targets in STEMM, using in depth case studies from successful organisations. A half day workshop drew out participant insights into their own organisational settings: targets are more likely to succeed when they are integrated into 'Business as Usual' corporate and organisational models, included in planning, risk, reward and recognition structures.

We look forward to working in partnership with the higher education and STEMM sector more broadly to share best practice in implementation.



# Workplace culture: strategic investment driving change

“Past attempts at improving diversity by expecting the pipeline from schooling to the professions to yield results have not delivered the outcomes we wish for. After decades of effort we now need to look at different approaches, and invest the necessary resources.”

UTS Provost Andrew Parfitt



Practical and measurable work for staff and student diversity and inclusion is carried forward by our Equity and Diversity Unit within the Centre for Social Justice and Inclusion. This includes:

- The **UTS Research Equity Initiative** creates targeted strategies and resourcing to provide additional support for academics with family responsibilities at key career stages
- **Childcare and Carer Support Fund (Conference Attendance)** – financial support of up to \$2000 to assist academics with carer responsibilities attend key conferences
- **Funding for Research during Parental Leave guidelines** – support for postdocs and academic staff to maintain their research during maternity leave
- **Research Re-establishment Grants** – up to \$15,000 for staff returning from maternity/parental leave or staff whose research has been significantly interrupted by past caring responsibilities, to concentrate on a research project
- **Jenny Edwards Research Fellowship** (formerly UTS Research Equity Fellowship)
  - a competitive fellowship of up to \$75,000 for mid-career staff whose research careers have been significantly interrupted by carer responsibilities
- **Women Researchers @ UTS Network** – a network for all academic women with regular meetings, forums and workshops concentrating on research and career related issues.



Our Athena Swan Action plan, our commitment to a safe and respectful workplace, our flexible work arrangements and a progressive approach to recruitment at all levels aim to close the identified gap between women and men in STEMM and support the global target of 40% academic women in STEMM by 2022. Current strategies include:

- Creating an intersectional approach, with an increased focus on understanding the needs of culturally diverse staff and learning lessons from the successful UTS Wingara Indigenous Employment Strategy
- Investment in facilities to promote inclusion, including new dedicated breastfeeding rooms and all-gender bathrooms in buildings across campus
- Career development and leadership programs for women, including a pilot cross-STEMM group coaching program for women at critical career junctures
- Changes to recruitment procedures and data gathering, and training for leaders and hiring managers to combat bias and ensure fair recruitment
- Recruiting identified positions for women in STEMM using an exemption from the anti-discrimination legislation
- Core hours guidelines in STEMM faculties to ensure that meetings are held at times that permit flexibility for carers
- Equal parental leave for all primary carers regardless of gender, along with return to work and childcare support for parents
- Initiatives to support staff with carer responsibilities, including a wide range of options for flexible working, which have recently been recognised with the award of Australia's first Carer's NSW Carer + Employer Accreditation.

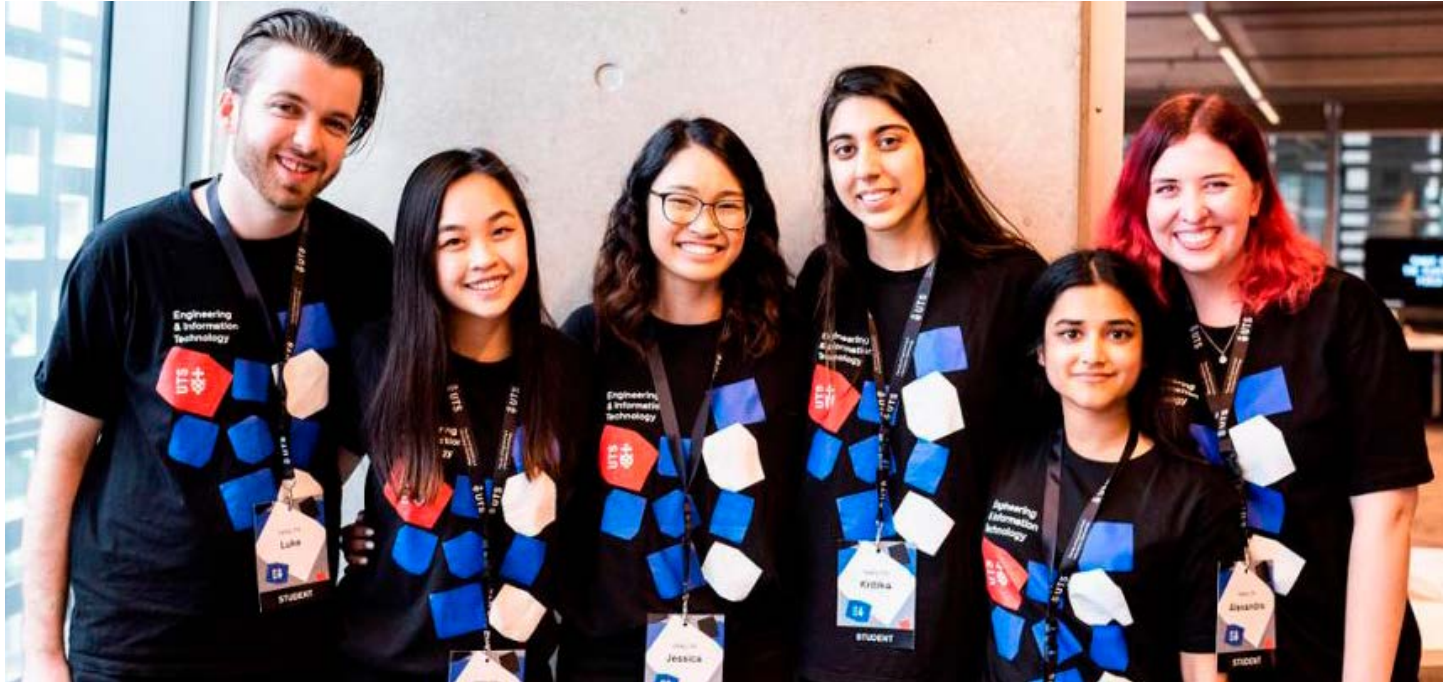
Faculties are driving particular initiatives to create a culture of inclusion:

- Tailored pilots in STEMM faculties to evaluate the way that identified policies and practices are implemented for bias, co-run by an Athena SWAN project officer
- Equity and Diversity Committees in all STEMM faculties engage staff in inclusion work and provide a vital community of practice for Athena SWAN
- UTS Women in Engineering and IT community events including fortnightly coffee hours, and semester lunches, provide opportunities for women staff and students and male allies to connect and support each other. 12 postgraduate student ambassadors promote a sense of community and support women pursuing postgraduate STEMM career pathways
- In January 2020 a UTS Summer Studio Subject, Designing and innovating a cultural shift, will give Engineering and IT students the opportunity to co-design a practical set of solutions to combat everyday sexism in the Faculty of Engineering and IT. Studio outcomes will directly lead into a Faculty program that will kick off in Autumn semester 2020

Future activities, and further changes to processes, will be informed by impact evaluation to ensure that outcomes meet organisational targets.



## Visibility: role modelling excellence and inclusion



**“It’s important that as we continue to celebrate the impressive individual achievements, to recognise the hard earned successes of our academics, we increase the visibility of women as experts and as role models: and continue to inspire more women to similarly lead transformative change within our society.”**

UTS Vice Chancellor Attila Brungs

Part of our Athena SWAN commitment included setting up the UTS: Equal Futures program. Equal Futures is a program of communications and events that supports visibility, inclusion, community and networking for women in STEMM areas at UTS. Particular initiatives of the Equal Futures program include:

- The UTS: Equal Futures website ([equalfutures.uts.edu.au](http://equalfutures.uts.edu.au)), an external facing website showcasing UTS womens’ achievements and UTS Athena SWAN commitments for an inclusive workplace culture. This website is used in our recruitment processes to and targeted to build UTS reputation as an employer of choice.
- **Leaders in their Field**, a publication profiling academic women at all career levels at UTS and highlighting their professional commitment to social justice, diversity and inclusion

- *The Strategies for Success: Implementing workforce gender targets* sector symposium, including a **background briefing** and **full report of findings from the workshop**
- Talks and networking events for Science Week, Ada Lovelace Day, International Women’s Day, and support for faculty events
- Co-branding Athena SWAN with other UTS diversity and inclusion programs, bringing together our intersectional inclusion focus.

In 2019 we will introduce a new guideline for inclusive language, images and practice in communications and events at UTS. In 2020, we will begin reporting internally on the impact of this guideline as part of our new metrics to evaluate the success of our gender equity work.

# Education and outreach: creating a pipeline for change



UTS is committed to strategic research and outreach to support and encourage girls and women to study STEM and STEMM subjects. Several programs operate in UTS STEMM areas to facilitate engagement for existing female students and build the pipeline supporting primary and high school students to study STEMM subjects.

## UTS Women in Engineering and IT

**UTS Women in Engineering and IT** delivers innovative gender equity programs that inspire and engage women and girls to embrace a world of opportunity, and celebrate women and girls fulfilling their potential in engineering and IT. Programs to retain and encourage current UTS students include:

- **UTS Lucy Mentoring program** provides 100 women in Engineering and IT with industry mentors to provide guidance on career pathways and support them to achieve their personal and professional goals. Students complete 20 hours of 1 on 1 mentoring and two professional development workshops, attend networking events and site visits with industry. The program has positive outcomes for students including increased confidence, awareness of study options, career pathways and industry connections.
- The UTS Women in Engineering and IT First Year Buddy Program provides women students with a peer group mentored by a later year student to increase a sense of belonging and connectedness in during the transition to university studies.
- UTS Women in Engineering and IT Cooperative and Faculty Scholarships provide financial support and industry internships for women commencing studies in engineering and IT. In 2019, 18 Cooperative Scholarships sponsored by industry and 20 Faculty Scholarships were awarded to students.

Outreach activities to inspire, support and encourage girls to study engineering and IT include:

- **UTS STEM x Play Primary School Program** piloted in 2019 at 5 schools across Sydney, impacting 230 girls in Year 5 and 6. This program is in-curriculum and in-classroom, aiming to develop teachers' capacity to deliver STEMM through project-based learning and design thinking to solve real-world challenges. The pilot is being evaluated to identify the impact on the confidence and interest of girls in STEMM, as well as their perceptions of STEMM pathways and professionals.
- **UTS Girls in STEMM multi-touchpoint Year 7-8 outreach program** - This in-curriculum and in-classroom program allows students to undertake the design thinking process and apply STEMM skills to real-world challenges, with the support of UTS and industry mentors. The pilot starting in October 2019 will reach 50 girls in Year 7 and 8, and be rolled out in 2020.
- **UTS Year 9-12 school outreach program and Girls in STEMM Days** reach over 3000 Year 9 – 12 girls each year. This program provides girls the opportunity to explore different areas of Engineering and IT through hands-on activities and learn about pathways and careers through conversations with current university students and industry professionals.



### **UTS: Wanago**

The **UTS Wanago Program** is delivering NSW STEMM electives for high-school students at UTS to address national STEMM workforce gaps, a key plank in UTS's response to the gaps in Australia's STEMM education. More than a stepping stone, The Wanago Program is a unique new pathway that connects high school students, and their teachers and parents, with higher education and future industries. It combines the delivery of Australian curriculum electives in university-like settings, alongside initiatives to inspire students, mentor teachers and raise awareness in parents.

Commencing in February 2019, the current three pilot programs are a collaboration between UTS, the NSW Department of Education and schools. These include:

- A one year, Stage five (Yr. 9/10), iSTEM class consisting of 33 students
- A one year, Stage 6 (Yr. 12), Design and Technology class of 25 students
- 2 year, Stage 6 (Yr. 11/12), Engineering Studies class of 21 students

Over the medium to long term the program aims to:

- Achieve 50% gender diversity
- Improve access for students from low socio-economic backgrounds
- Build teacher capacity through engagements with UTS academics and industry experts.
- Increase learning outcomes through the development of curriculum enrichment activities and projects (facilitated by UTS academics).
- Develop student readiness to university.
- Raise student, parent and community awareness on the 'future of work', Australia's STEMM challenges and opportunities
- Advocate for STEMM education through data collection and building impact evaluation.
- Facilitate pathways for students with foundational academic and advanced technology proficiency back to UTS (or other universities)





### **UTS Galuwa Experience**

The UTS Galuwa Experience program is aimed at Indigenous students in years 9-12 who have interest in or aptitude for STEMM areas, providing interactive hands-on workshops, site visits with industry partners, cultural activities, and information about career paths. Participants also hear inspirational talks from Indigenous and non-Indigenous students, cadets and professionals. The Galuwa experience in STEMM areas includes:

- A 5-day program for students who are interested in the fields of engineering or IT, as well as those who naturally have an aptitude for maths, creative thinking and problem solving and are unsure of which career path to follow.
- A 3-day program for students who are interested in the fields of nursing, midwifery and sport and exercise science.
- A 3-day program for students who are interested in the fields of mathematics and science.

### **STEM Education Futures Research Centre**

The **UTS STEM Education Futures Research Centre** was formed in 2017 and reflects a research strength within the UTS Faculty of Arts and Social Sciences. The STEM Education Futures Research Centre exists to address the question: How can we best enhance STEM capacity and capability in Australia? Four key areas of focus include:

- Preparing teachers of mathematics and science for the technology-rich schools of the future.
- Using digital technologies to enhance learning.
- Developing agile mathematics and science practices.
- Driving government policy to enhance STEMM literacies.

Centre research embraces new and emerging technologies in STEMM education, learning analytics to help teachers and students achieve better learning outcomes, mobile learning and STEMM pedagogy, teacher education and professional learning, and the use of futures-oriented methodologies such as the Best-Worst Scaling and Discrete Choice Experiment. Aligned with the UTS inclusive model of social justice and diversity, research also focuses on strategies to improve STEMM education equity in gender, Indigenous education and students from disadvantaged background.

# Evaluation: measuring our social impact

**“Ensuring social justice values are integral to all of our business operations, and the role we seek to play in driving social change, begins on campus and in our community. We strive to embed inclusivity, sustainability and accessibility as part of our business and employment practices. Our organisational initiatives enable UTS, and our people, to bring about social change.”**

UTS Social Justice Report 2018



Reporting to external bodies, including as part of the Workplace Gender Equity Employer of Choice accreditation and the Athena SWAN Award accreditation process, reflects activities embedded in our business as usual approach and our overall planning and governance structure. UTS gender equity and inclusion programs are embedded in business planning, with annual corporate plans outlining Athena SWAN measurables and Key Performance Indicators setting targets for the proportion of women in STEMM and in senior positions.

Evaluation of the Equal Futures and Athena SWAN programs will be undertaken by the UTS Centre for Social Justice and Inclusion in connection with reporting under the innovative

## **Social Impact Framework (SIF).**

The SIF was developed to frame UTS's organisational commitment to strategic social change. The SIF supports UTS to better understand its collective organisational capacity, and to build and nurture strategic and generative partnerships that drive transformational community change.

The SIF facilitates UTS to align business operations and strategies to reflect a long-term independent commitment to social impact, and evaluate their outcomes. Overseen by the Vice Chancellor's Social Justice and Inclusion Committee, new Equal Futures metrics have been created to show faculty progress for workplace inclusion using a combination of human resources data and staff feedback, and a planned evaluation of the impact of

individual Athena SWAN action items will commence at the end of 2020.

This process will allow us to understand and better progress outcomes aligned with our strategic aims to recruit and retain a higher proportion of women and facilitate a diverse and inclusive workplace culture in our STEMM areas. Evaluation findings will be reported to the Committee and to Faculties to assist their operations. A regular public report on the progress of the UTS Athena SWAN plan, including top level findings from the evaluation process, will be hosted on the UTS **Equal Futures** website.



### Evaluating outreach programs

UTS Women in Engineering and IT is increasingly engaging in evaluation of education outreach programs. Short term outcomes of the primary and high school STEM outreach programs are evaluated to measure increase in confidence and interest in STEM and perceptions of STEM professions and professionals. Evaluation tools include pre- and post- surveys, interviews and written reflections with students, teachers and parents. The short-term outcomes of the Lucy Mentoring Program are evaluated yearly through a pre- and post- survey. A research project to evaluate the long-term impact of the Lucy Mentoring Program is currently underway and includes interviews with mentees and mentors who have participated in Lucy Mentoring over the past 15 years of the program's operation. All evaluations will be available on the Women in Engineering and IT website at the end of 2019.

Barriers to evaluation include the lack of national benchmarking and a lack of data following individual education outcomes. Suggestions to facilitate evaluation across the sector include:

- A national survey of female secondary and tertiary students would assist the sector to understand which initiatives influenced their decisions to study STEM subjects and degrees
- Facilitating the ability to access information on program participants' secondary and tertiary education choices would assist evaluators to understand whether specific programs are having the impact of facilitating pathways into STEMM higher education
- Shared best practice, benchmarked impact evaluation approaches across STEMM programs to identify which approaches are effective, and identify opportunities for collaboration.