



engineers
without borders
australia

EWB Challenge

Innovation for sustainability, access, and opportunity

2022 Program Outline

EWB Challenge Overview

The EWB Challenge Program enables university academics to build the competencies of first-year students in areas such as the engineering design process, professional practice, and sustainable development theory through engagement on real-world project briefs integrated into the curriculum.

Project briefs are brought to life by engagement opportunities with EWB staff and volunteers, along with interactive website resources through which students can dive deeply into a project context. The materials on the EWB Challenge website, including a monitored discussion forum, support students as they develop creative, appropriate, technically-sound design proposals.

2022 EWB Challenge with Dawul Wuru Aboriginal Corporation

The 2022 EWB Challenge is delivered through partnership with [Dawul Wuru Aboriginal Corporation](#) (Dawul Wuru) with a focus on their ranger programs. Dawul Wuru is an Aboriginal Traditional Owner owned, managed and governed community organisation that exists to 'protect, secure, support and promote the rights and interests of local Aboriginal Traditional owners and custodians'. Project briefs support Yirrganydji people to sustain wellbeing, culture and care for their rainforest and coastal land and sea Country between Cairns and Port Douglas, in Far North Queensland in Australia, for the benefit of current and future generations.

In this Program Outline you'll find:

- How the EWB Challenge works
- 2022 Program Dates
- Available Activities
- Program Rules and Eligibility
- Submission Recommendations
- Program Background - including the overarching aims, graduate skills developed, and community partner support

Contact Us

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How It Works

Each year, an EWB Challenge design brief is developed based on a set of sustainable development projects identified by EWB Australia with a community-based partner organisation. In past years, EWB has partnered with organisations based in Vanuatu, Zambia, Cameroon, Nepal, Timor-Leste, Vietnam, India, Cambodia and rural Australia.

The EWB Challenge program is designed for students enrolled in a first-year university course registered to participate through EWB Australia. Courses in either semester one or semester two, as well as multidisciplinary courses with students from outside of the engineering faculty are welcome to participate. The EWB Challenge Program is a flexible platform, which can be adapted to a variety of course structures with the support of the EWB Australia team, and has also been adapted for advanced courses such as Masters programs.

Student teams may wish to address a single project brief, or provide an integrated design solution for two or more areas outlined in their EWB Challenge brief. Alternative projects may also be considered where appropriate, however prior communication with EWB Australia via the relevant project discussion forum on our website is recommended.

At the conclusion of each academic semester, universities may nominate student reports for external review. Each university may nominate up to four team submissions across the academic year. Based on feedback from our external reviewers, one outstanding team from each participating university will be invited to present their work at a Showcase event to representatives from EWB Australia, our community partner organisations, and members of related industries. Awardees are announced at a special awards ceremony following the presentations. All submissions to EWB Australia will be compiled and shared back to the community partner organisation.

2022 Program Dates

Participating universities are invited to submit top student submissions to EWB Australia at the end of each semester to go through the review process and be shared back with relevant partners.

- **Semester 1 Reports Due:** 1st July 2021
- **Semester 2 Reports Due:** early November 2022 (final date TBC)
- **Showcase Event:** early December 2022

Available Program Activities

The annual EWB Challenge registration fee is between \$7,500 – 12,500 + GST AUD for universities, which supports the delivery of the program, and provides access to the following engagement points throughout the year:

- **The EWB Challenge Design Brief provided to universities (February)** – an outline of the priority areas and projects identified by community representatives and our partner organisation are presented through a detailed design brief available in PDF form and on the [EWB Challenge website](#).
- **Supporting resources (February)** – including written content, interviews, data, photos, videos, and interactive site walkthroughs to assist with a developing understanding of the context where the EWB Challenge is based.
- **Introductory workshop for academics (February/March)** – option to attend a pre-semester workshop for course coordinators and tutors covering: an introduction to EWB Australia, the program context and projects, background on the community partner organisation, along with potential opportunities for academics to share ideas around what the EWB Challenge looks like in the classroom. Currently delivered online and can be customised for participants.
- **Introductory presentation or workshop for students (March & August - in line with semester of participation)** – at least 1 presentation and/or Q&A session can be delivered by an EWB Australia member and slides provided to the course coordinator upon request. Currently these are delivered online.
- **Student access to the EWB Challenge discussion forum (ongoing)** – monitored by EWB Australia staff throughout the semester to support student questions around project context
- **External review of top student reports (July & November)** – up to four reports may be submitted to the EWB Challenge for external review by professionals primarily in the engineering industry
- **Opportunity for attendance at the EWB Challenge Series Showcase (December)** – the top student team from each university will be invited to represent their university at the EWB Challenge Series Showcase at the end of the year.

In addition to the above components of the EWB Challenge, registration fees support the administration and staff costs associated with the program and on-going engagement with our community-based partners. This ensures appropriate and respectful partnership development, including the sharing back and further investigation of student ideas.

The registration fee is only applied once per year near the beginning of the year – universities are welcome to participate in either Semester 1, Semester 2, summer semester, or multiple semesters, and across multiple courses.

Program Rules and Eligibility

When engaging with the EWB Challenge, students and universities must comply with the rules outlined below.

Student teams or individuals are eligible to participate in the EWB Challenge providing they:

- Are enrolled in a university course registered with the EWB Challenge. A list of [participating universities](#) can be found on the website.
- Respect the privacy of all participating organisations and communities. **Under no circumstances are participants to contact the communities or partner organisations directly**, unless given advance permission by EWB Australia. All questions and requests for data should be made through the discussion forum on the EWB Challenge website: www.ewbchallenge.org. Note: inappropriate engagement with community stakeholders will immediately disqualify student teams from the EWB Challenge Series Showcase awards process.
- Comply with the EWB Challenge Submission Recommendations below.

Universities are eligible to participate in the EWB Challenge based on the following provisions. By registering to participate in the EWB Challenge universities are agreeing to these provisions:

- A registration fee is set per university, per year. This fee provides important funding to support the delivery of the EWB Challenge including presentations at universities, communication with students and lecturers, website, resources and the development of the design brief and engagement with the community-based partner organisation.
- The EWB Challenge will be incorporated into appropriate subjects offered by universities during Semester 1, Semester 2 and/or summer semesters.
- Individual universities will decide how to integrate the program into their curriculum and will ultimately be responsible for setting learning objective, delivering activities, and assessing students.
- Each university will be responsible for assessing their own teams' submissions and selecting up to four team reports for submission to EWB for external review and Showcase eligibility.
- All submissions for review will be judged against a common set of criteria and guidelines. These [criteria](#) are available for download on the EWB Challenge website.
- The external review process will determine which one student submission (team or individual) to EWB Australia from each university will be invited to participate in the annual end-of-year Showcase event including awards. At the Showcase participating students present their project to a judging panel, and a sub-panel of judges will determine award winners based on student presentations. Only in unusual circumstances will more than one student submission from a university be invited to the Showcase.
- All student reports submitted to EWB Australia for review are given to the community partner to support their development programs. Universities submitting student reports to the EWB Challenge agree to dedicate the ownership of any new intellectual property (including designs, computer models, data sets, work materials etc) contained within the student reports to EWB Australia for use in the development of programs with their associates at no cost to EWB or their associates.

Submission Recommendations

The EWB Challenge design briefs created open-ended learning experiences, and thus the breadth and depth of design is left to individual universities and student teams to scope within the context of the submission recommendations provided.

Each university is invited to submit up to four student design submissions to be shared back with relevant community partners and considered for the EWB Challenge Showcase. Please see 'Key Dates' above for the submission closing dates. You can view examples of past high performing reports on the EWB Challenge website.

It is recommended that each submission include:

- **Response to the specific design considerations outlined on the EWB Challenge website.**
- **Evaluation of alternatives** – identify the alternative options considered during the design process and a justification for the selected technology, approach and/or process with a particular focus on its appropriateness to the local community and culture.
- **Details of the conceptual design, analysis and final design** – design calculations or an explanation may be included, appropriate to the level of team experience. Include basic advice on the construction and operation of the design.
- **Identification of schedules and costs** - detailed design, construction and maintenance timing and costs associated with completion and construction of the design.
- **Identification of how the selected design is appropriate** to the social, environmental, economic and cultural context of the community.
- **Discussion of ethics, long term sustainability and maintenance** of the engineering work that would be completed as a consequence of the design.
- **Outline details of any external support provided** to the design team and identify any content that is not attributable to the design team.
- **Reflection** on students' learning and/or experience gained.

All submissions should also include a **one-page summary of the design proposal** to assist in sharing the students' ideas with the community partner organisation, submitted in Word document format. A template can be downloaded from the website. This should be a standalone document from which the partner organisation can understand the key concepts of the project.

Program Background

EWB Australia is working toward the goal of a transformed engineering sector that sees every engineer and related technical professionals with the skills, knowledge, experience, and attitude to contribute to a sustainable world where technology benefits all.

Key Program Aims

The EWB Challenge program aims to contribute to this broader goal by working at the university level to enable shifts within engineering curriculum, which will shape future engineers.

- **Introduce** first-year university students to concepts of human-centred engineering through working on real-world projects. Human-centred engineering uses a people-centred, strengths-based approach to improve community health, wellbeing, and opportunity
- **Empower** university students to gain an increased awareness of the role of engineers and technical professionals in society
- **Support** EWB community-based partner organisations through project scoping and resource development, access to student design ideas, and the sharing of knowledge and resources with universities internationally

Future-Fit Graduate Attributes

EWB supports the integration of authentic project-based work into undergraduate courses with international and domestic, social, cross-cultural and sustainability dimensions. The program is designed to develop engineering graduate attributes specified by the national accrediting body Engineers Australia:

- Understanding of the social, cultural, global and environmental responsibilities of the professional engineer, and the need for sustainable development.
- Understanding of the principles of sustainable design and development.
- Understanding of professional and ethical responsibilities and commitment to them.
- Ability to function effectively as an individual and in multi-disciplinary and multicultural teams.

In addition, the program sets the scene for students to develop 9/10 skills the World Economic Forum believes are essential for the future:

- Complex problem solving
- Critical thinking
- Creativity
- People management
- Coordinating with others
- Emotional intelligence
- Judgement and decision making
- Service orientation

In parallel to key competency development, the EWB Challenge design brief and supporting resources provide our university partners the opportunity to align with and contribute to the Sustainable Development Goals through curriculum.

Our Community Partners – links to supporting real-world impact

The EWB Challenge provides EWB Australia's community-based partners and programs with a valuable pathway for connecting with the global engineering and design sector.

EWB Australia works collaboratively with our community-based partner to identify projects for the design briefs that suit student engagement and support. Connecting with universities through a platform like the EWB Challenge is an opportunity for programs and community partners to source innovative, creative ideas and research for a broad range of projects of interest to them.

At the completion of each semester, ideas generated through student projects are workshopped with EWB Australia and partner staff and volunteers, to investigate how appropriate and inspiring outputs might be integrated into current or future areas of work.