



engineers  
without borders  
australia

# the EWB Challenge:

Innovation for sustainability, access, and opportunity

**2020 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.

## 2020 EWB Challenge with the Centre for Appropriate Technology

The 2020 EWB Challenge is delivered in partnership with the Centre for Appropriate Technology (CfAT), an Aboriginal and Torres-Strait Islander controlled not-for-profit organisation which 'exists to support people in regional and remote Australia in the choices they make in order to maintain their relationship with country'<sup>1</sup>. EWB Challenge project briefs explore appropriate technology which supports traditional owners living and thriving on homelands and outstations, with a focus on CfAT's work with communities in the Cape York region of Far North Queensland.

### In this Program Outline you'll find:

- How the EWB Challenge works
- 2020 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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<sup>1</sup> <https://cfat.org.au/who-we-are>

## How It Works

Each year, a new 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 open to students enrolled in a primary 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 team.

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. These submissions will be compiled by the EWB team and shared back to the community partner organisation.

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, our community partner organisations, and members of the engineering and international development sectors. Awardees are announced at a special awards ceremony following the presentations.

## 2020 Program Dates

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

- **Semester 1 Reports Due:** 3<sup>rd</sup> July 2020
- **Semester 2 Reports Due:** early November 2020 (final date TBD)
- **Showcase Event:** early December 2020

# Available Program Activities

The annual EWB Challenge registration fee is between \$8,500 – 14,000 + GST 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 (January)** – 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 (January/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 context and projects, background on the community partner organisation, appropriate technology and EWB’s human-centred engineering approach, along with opportunities for academics to share ideas around what the EWB Challenge looks like in the classroom. Generally delivered by region and can be customised for participants.
- **Introductory presentation or workshop for students (March & August - in line with semester of participation)** – at least 1 presentation can be delivered by an EWB member and/or slides provided to the course coordinator upon request.
- **Student access to the EWB Challenge discussion forum (ongoing)** – monitored by EWB staff through the semester to support student questions around project context
- **External review of top student reports (May & October)** – up to four reports may be submitted to the EWB Challenge for external review by professionals 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 – universities are welcome to participate in either Semester 1, Semester 2, or both, 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** 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 at:  
[www.ewbchallenge.org/participating-universities](http://www.ewbchallenge.org/participating-universities)
- Respect the privacy of all participating organisations and communities. Under no circumstances are participants to contact the communities or partner organisations directly. All questions and requests for data should be made through the discussion board on the EWB Challenge website: [www.ewbchallenge.org](http://www.ewbchallenge.org). Note, inappropriate engagement with community stakeholders will immediately disqualify student teams from the EWB Challenge Showcase awards process.

**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 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 One and/or Two. It is up to universities to decide how to integrate the program into their curriculum.
- 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.
- A reviewer panel will decide upon a short-list of entries for the awards presentation at the Showcase Event, held in Australia, based on the provided review criteria. The decisions of the judging panel will be final.
- All student reports submitted to EWB 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

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.

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. 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 with the skills, knowledge, experience, and attitude to contribute to a sustainable world where no one is left behind.

## 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** primary year university students to concepts of humanitarian engineering through working on real-world projects. Humanitarian 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 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 and partner staff and volunteers, to investigate how appropriate and inspiring outputs might be integrated into current or future areas of work.