



ENEG14005 Engineering Honours Project Implementation

Term 2 - 2021

Profile information current as at 27/04/2024 05:07 pm

All details in this unit profile for ENEG14005 have been officially approved by CQUniversity and represent a learning partnership between the University and you (our student). The information will not be changed unless absolutely necessary and any change will be clearly indicated by an approved correction included in the profile.

General Information

Overview

As a student in the final year of your Bachelor of Engineering course, you will work independently to manage and implement a project (planned in ENEG14003) that allows you to demonstrate professional capabilities expected of graduating professional engineers. You will work and learn autonomously, communicate progress and prepare reports and presentations. You will conduct research to support your project decision-making, and you are required to demonstrate critical thinking and document sound analysis and judgement in project working documents and final reporting. You will solve technical problems that arise and evaluate project processes, outcomes and related learning experiences, and you will prepare a formal report, poster and project presentation. Note that if you completed the prerequisite Planning unit more than two terms ago then you need to check with your academic adviser to see if the project is still available.

Details

Career Level: *Undergraduate*

Unit Level: *Level 4*

Credit Points: *12*

Student Contribution Band: *8*

Fraction of Full-Time Student Load: *0.25*

Pre-requisites or Co-requisites

Prerequisite: ENEG14003 Engineering Honours Project Planning

Important note: Students enrolled in a subsequent unit who failed their pre-requisite unit, should drop the subsequent unit before the census date or within 10 working days of Fail grade notification. Students who do not drop the unit in this timeframe cannot later drop the unit without academic and financial liability. See details in the [Assessment Policy and Procedure \(Higher Education Coursework\)](#).

Offerings For Term 2 - 2021

- Bundaberg
- Cairns
- Gladstone
- Mackay
- Online
- Rockhampton

Attendance Requirements

All on-campus students are expected to attend scheduled classes – in some units, these classes are identified as a mandatory (pass/fail) component and attendance is compulsory. International students, on a student visa, must maintain a full time study load and meet both attendance and academic progress requirements in each study period (satisfactory attendance for International students is defined as maintaining at least an 80% attendance record).

Website

[This unit has a website, within the Moodle system, which is available two weeks before the start of term. It is important that you visit your Moodle site throughout the term. Please visit Moodle for more information.](#)

Class and Assessment Overview

Recommended Student Time Commitment

Each 12-credit Undergraduate unit at CQUniversity requires an overall time commitment of an average of 25 hours of study per week, making a total of 300 hours for the unit.

Class Timetable

[Regional Campuses](#)

Bundaberg, Cairns, Emerald, Gladstone, Mackay, Rockhampton, Townsville

[Metropolitan Campuses](#)

Adelaide, Brisbane, Melbourne, Perth, Sydney

Assessment Overview

1. **Presentation**

Weighting: 10%

2. **Written Assessment**

Weighting: 10%

3. **Written Assessment**

Weighting: 10%

4. **Presentation**

Weighting: 10%

5. **Thesis/Dissertation**

Weighting: 60%

Assessment Grading

This is a graded unit: your overall grade will be calculated from the marks or grades for each assessment task, based on the relative weightings shown in the table above. You must obtain an overall mark for the unit of at least 50%, or an overall grade of 'pass' in order to pass the unit. If any 'pass/fail' tasks are shown in the table above they must also be completed successfully ('pass' grade). You must also meet any minimum mark requirements specified for a particular assessment task, as detailed in the 'assessment task' section (note that in some instances, the minimum mark for a task may be greater than 50%). Consult the [University's Grades and Results Policy](#) for more details of interim results and final grades.

CQUniversity Policies

All University policies are available on the [CQUniversity Policy site](#).

You may wish to view these policies:

- Grades and Results Policy
- Assessment Policy and Procedure (Higher Education Coursework)
- Review of Grade Procedure
- Student Academic Integrity Policy and Procedure
- Monitoring Academic Progress (MAP) Policy and Procedure – Domestic Students
- Monitoring Academic Progress (MAP) Policy and Procedure – International Students
- Student Refund and Credit Balance Policy and Procedure
- Student Feedback – Compliments and Complaints Policy and Procedure
- Information and Communications Technology Acceptable Use Policy and Procedure

This list is not an exhaustive list of all University policies. The full list of University policies are available on the [CQUniversity Policy site](#).

Previous Student Feedback

Feedback, Recommendations and Responses

Every unit is reviewed for enhancement each year. At the most recent review, the following staff and student feedback items were identified and recommendations were made.

Feedback from Student Satisfaction Survey

Feedback

Academic advisers facilitate students to complete projects to a high standard.

Recommendation

Academics will be encouraged to continue helping their students.

Feedback from Student Satisfaction Survey

Feedback

The weekly Zoom sessions and recordings were useful to obtain assistance and to stay on track with the project.

Recommendation

Weekly Zoom sessions should be maintained to allow students and staff to discuss project matters promptly.

Feedback from Student Satisfaction Survey

Feedback

The assessment instructions are too vague, which makes it difficult for students and Academic Advisers to achieve the expectations.

Recommendation

Assessment rubrics should be created to articulate the expectations at various levels of achievement clearly.

Feedback from Student Satisfaction Survey

Feedback

The unit coordinator needs to be more accessible to students, to ensure timely guidance and resolution of project issues.

Recommendation

The unit coordinator should be more flexible with their availability to project students.

Unit Learning Outcomes

On successful completion of this unit, you will be able to:

1. Apply and reflect on Engineers Australia's Stage One Competencies for Professional Engineers to the planning and implementation phases of engineering projects
2. Implement the project plan prepared in the Planning unit in consultation with and guidance from your project adviser(s)
3. Think critically, demonstrate sound analysis and make rational judgements and decisions in the implementation phases of your project
4. Communicate preliminary results to project adviser(s) promptly to solicit timely and constructive feedback
5. Prepare professional project documents that convey the processes and outcomes of your project
6. Communicate your project outcomes to project adviser(s), other stakeholders and the wider community.

The Learning Outcomes for this unit are linked with the Engineers Australia Stage 1 Competency Standards for Professional Engineers in the areas of 1. Knowledge and Skill Base, 2. Engineering Application Ability and 3. Professional and Personal Attributes at the following levels:

Advanced 1.1 Comprehensive, theory-based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the engineering discipline. (LO: 1A 2A 3A 4A 5A 6A) 1.2 Conceptual understanding of the mathematics, numerical analysis, statistics, and computer and information sciences which underpin the engineering discipline. (LO: 1A 2A 3A 4A 5A 6A) 1.3 In-depth understanding of specialist bodies of knowledge within the engineering discipline. (LO: 1A 2A 3A 4A 5A 6A) 1.4 Discernment of knowledge development and research directions within the engineering discipline. (LO: 1A 2A 3A 4A 5A 6A) 1.5 Knowledge of engineering design practice and contextual factors impacting the engineering discipline. (LO: 1A 2A 3A 4A 5A 6A) 1.6 Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the specific discipline. (LO: 1A 2A 3A 4A 5A 6A) 2.1 Application of established engineering methods to complex engineering problem solving. (LO: 1A 2A 3A 4A 5A 6A) 2.2 Fluent application of engineering techniques, tools and resources. (LO: 1A 2A 3A 4A 5A 6A) 2.3 Application of systematic engineering synthesis and design processes. (LO: 1A 2A 3A 4A 5A 6A) 2.4 Application of systematic approaches to the conduct and management of engineering projects. (LO: 1A 2A 3A 4A 5A 6A) 3.1 Ethical conduct and professional accountability. (LO: 1A 2A 3A 6A) 3.2 Effective oral and written communication in professional and lay domains. (LO: 1A 2A 3A 4A 5A 6A) 3.3 Creative, innovative and pro-active demeanour. (LO: 1A 2A 3A 4A 5A 6A) 3.4 Professional use and management of information. (LO: 1A 2A 3A 4A 5A 6A) 3.5 Orderly management of self, and professional conduct. (LO: 1A 2A 3A 4A 5A 6A) 3.6 Effective team membership and team leadership. (LO: 1A 2A 3A 6A)

Note: LO refers to the Learning Outcome number(s) which link to the competency and the levels: N - Introductory, I - Intermediate and A - Advanced.

Refer to the Engineering Undergraduate Course Moodle site for further information on the Engineers Australia's Stage 1 Competency Standard for Professional Engineers and course level mapping information <https://moodle.cqu.edu.au/course/view.php?id=1511>



Textbooks and Resources

Textbooks

There are no required textbooks.

IT Resources

You will need access to the following IT resources:

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)
- Presentation software such as MS Powerpoint
- Project management software such as MS Project
- Software specific to project
- Webcam and headset for on-line sessions.
- Word processing software such as MS Word

Referencing Style

All submissions for this unit must use the referencing styles below:

- [Harvard \(author-date\)](#)
- [Turabian](#)

For further information, see the Assessment Tasks.

Teaching Contacts

Benjamin Taylor Unit Coordinator
ben.taylor@cqu.edu.au

Schedule

Week 1 - 12 Jul 2021

Module/Topic	Chapter	Events and Submissions/Topic
Commence implementation of your project plan prepared in the Planning unit. Consult with your advisor(s) and decide if revisions to your scope and plan are necessary. Start preparing your project update presentation which is scheduled for week 4.		Complete the Progress Update form

Week 2 - 19 Jul 2021

Module/Topic	Chapter	Events and Submissions/Topic
Continue working on your project as well as preparing your project update presentation which is scheduled for week 4.		

Week 3 - 26 Jul 2021

Module/Topic	Chapter	Events and Submissions/Topic
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Continue working on your project as well as preparing your project update presentation which is scheduled for week 4.

Complete the [Progress Update form](#)

Week 4 - 02 Aug 2021

Module/Topic

Chapter

Events and Submissions/Topic

Present your project update presentation to your academic advisor and other academics in your discipline. Take notes from the advice and guidance given after your presentation.

Project Update Presentation:
Present during your allocated session in the program.

Week 5 - 09 Aug 2021

Module/Topic

Chapter

Events and Submissions/Topic

Process feedback from your update presentation.

Complete the [Progress Update form](#)

Vacation Week - 16 Aug 2021

Module/Topic

Chapter

Events and Submissions/Topic

If you have not already done so then commence work on your thesis layout. A good place to start is by drafting the likely headings and adding all the relevant sections from your project plan.

Week 6 - 23 Aug 2021

Module/Topic

Chapter

Events and Submissions/Topic

Discuss with your Academic Advisor if you should create a Project Poster or a Conference Paper. Understand what is required by examining the templates provided.

Complete the [Progress Update form](#)

Week 7 - 30 Aug 2021

Module/Topic

Chapter

Events and Submissions/Topic

Continue preparing your preliminary results. Check Moodle for the performance guidelines.

Week 8 - 06 Sep 2021

Module/Topic

Chapter

Events and Submissions/Topic

Invite your academic advisor to provide guidance by submitting your preliminary results. You may also consider submitting your draft document to your industry advisor (if applicable).

Complete the [Progress Update form](#)

Preliminary Results Due: Week 8
Wednesday (8 Sept 2021) 10:00 pm
AEST

Week 9 - 13 Sep 2021

Module/Topic

Chapter

Events and Submissions/Topic

Discuss your Project Poster or Conference Paper with your academic advisor.

Week 10 - 20 Sep 2021

Module/Topic

Chapter

Events and Submissions/Topic

Use the advice and guidance from your project update presentation and preliminary results to refine your final Thesis, Poster or Paper and final Thesis presentation.

Complete the [Progress Update form](#)

Week 11 - 27 Sep 2021

Module/Topic	Chapter	Events and Submissions/Topic
Check Moodle for guidance on your Thesis, Poster/Paper and final project presentation. Review and reflect on your attainment of Engineers Australia's Stage One Competencies.		Project Poster or Conference Paper Due: Week 11 Wednesday (29 Sept 2021) 10:00 pm AEST

Week 12 - 04 Oct 2021

Module/Topic	Chapter	Events and Submissions/Topic
Your Thesis and reflections on other students' presentations should be finalised this week. Present your findings at the CQU Engineering Showcase which is scheduled for Wednesday of week 12.		Thesis Presentation: Present during your allocated session in the program.

Review/Exam Week - 11 Oct 2021

Module/Topic	Chapter	Events and Submissions/Topic
Submit your Thesis and reflections.		Thesis Due: Review/Exam Week Wednesday (13 Oct 2021) 10:00 pm AEST

Assessment Tasks

1 Project Update Presentation

Assessment Type

Presentation

Task Description

Prepare a ten-minute presentation which updates your Academic Advisor and other academics on your project progress. Further guidance to the required content of your presentation is in Moodle.

Presentations are via Zoom software only (i.e. no on-campus presentations). If you are not familiar with Zoom software then please ensure you do familiarise yourself with Zoom software before this date. Ensure you are located somewhere with a good internet connection so we can see you as well as your presentation slides. Be prepared to answer questions about your project and take further advice and guidance from the audience.

Presentations are planned for Wednesday Week 4, in the afternoon and evening. Refer to Moodle for the final schedule. Preference to the evening time slot is given to students enrolled in distance mode. Please add your name to your preferred time within the spreadsheet at the link to the proposed schedule in Moodle. Please note that access to the spreadsheet is by using your CQU email address and password (not your personal Gmail account).

You are expected to watch the other presentations in your session so you can learn about presenting projects more effectively from the feedback and comments that other students receive.

Assessment Due Date

Present on Wednesday of Week 4 during your allocated session in the program.

Return Date to Students

Advice and guidance will be given verbally immediately after your presentation. Please take your own notes.

Weighting

10%

Minimum mark or grade

25%

Assessment Criteria

Presentations are marked on a five-point scale from Unacceptable to Excellent or Strongly Disagree to Strongly Agree. The criteria are:

- Progress is on time and the schedule is sensible (formative)
- The adopted methodology is appropriate and achievable (formative)
- The quality of work meets the graduate standard (formative)
- The presentation delivery was concise and confident (formative)
- The presentation was on time, and time was used well (formative)
- Responses to questions were concise, confident and accurate – optional – (formative)
- The overall grade based on scores for all formative criteria and any academic judgements (**summative**)

Referencing Style

- [Harvard \(author-date\)](#)
- [Turabian](#)

Submission

Online

Submission Instructions

Please submit your PowerPoint prior to your session to facilitate solving any issues through Zoom.

Learning Outcomes Assessed

- Implement the project plan prepared in the Planning unit in consultation with and guidance from your project adviser(s)
- Communicate preliminary results to project adviser(s) promptly to solicit timely and constructive feedback

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Team Work
- Information Technology Competence
- Cross Cultural Competence
- Ethical practice

2 Preliminary Results

Assessment Type

Written Assessment

Task Description

Prepare a draft Thesis comprising updated chapters from your Project Proposal and your preliminary results. Check Moodle and the Q&A Forum for further assessment advice.

Assessment Due Date

Week 8 Wednesday (8 Sept 2021) 10:00 pm AEST

Return Date to Students

Academic Advisors will endeavor to provide feedback within 2 weeks of the due date for on-time submissions.

Weighting

10%

Minimum mark or grade

25%

Assessment Criteria

Refer to the Marking Rubric for indicators of attainment for the assessment criteria:

- Planning feedback discussion (conducted through project meetings)
- Planning feedback application
- Thesis preparation
- Project progress
- Methodology

- Analysis of data and information
- Presentation of results
- Discussion of results
- Project management (based on progress updates submitted and regular project meetings)

Referencing Style

- [Harvard \(author-date\)](#)
- [Turabian](#)

Submission

Online

Submission Instructions

Submit a single document.

Learning Outcomes Assessed

- Implement the project plan prepared in the Planning unit in consultation with and guidance from your project adviser(s)
- Communicate preliminary results to project adviser(s) promptly to solicit timely and constructive feedback

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Team Work
- Information Technology Competence
- Cross Cultural Competence
- Ethical practice

3 Project Poster or Conference Paper

Assessment Type

Written Assessment

Task Description

You must decide to prepare either a portrait poster (A1 size) suitable for display at a technical conference, or a Conference Paper (maximum 6 pages). Your submission will be shared with all engineering academics, project students, and attendees of the Engineering Showcase via a link on the program. Delayed submissions may not be linked to in the program.

Posters provide a highly visual summary of a project that are displayed to conference delegates to entice them to attend your presentation. It is not possible to include all the details of your Thesis on the poster so use the space skillfully to convey a holistic view of your project. The conference paper alternative is better suited to students who intend to publish the results of their thesis or if it is easier to describe the project through detailed explanations with a few supporting figures and images. Templates for the poster and paper options are provided on Moodle.

Assessment Due Date

Week 11 Wednesday (29 Sept 2021) 10:00 pm AEST

Return Date to Students

Feedback is provided at Certification of Grades.

Weighting

10%

Minimum mark or grade

25%

Assessment Criteria

Posters and Papers are marked on a five-point scale from Unacceptable to Excellent or Strongly Disagree to Strongly Agree. The criteria are:

- The paper abstract or poster layout concisely covers the main phases of a project: introduction and aim, methods, results, conclusions and recommendations (formative)
- The aim and objectives are clear, concise, logical and suited to a thesis / final-year project (formative)
- The methodology follows the correct industry practices and is suited to a thesis / final-year project (formative)

- The results are clear, accurate, and relevant to the title, aim and methodologies of the project (formative)
- The conclusions and recommendations follow on logically from the results and close out all project objectives (formative)
- Suitable citations support discussions in the introduction, methodology and results which demonstrates strong connections to industry practices, where relevant (formative)
- Suitable language and grammar is used throughout to demonstrate a professional approach to the project (formative)
- The poster or paper is accurately prepared following the templates provided (formative)
- Any tables, figures, graphs or images are of a suitable size and style with clear text incorporating accurate figures of sensible precision and correct units (formative)
- Overall grade based on formative criteria scores and academic judgement (**summative**)

Markers may also include comments on suggested improvements if necessary.

Referencing Style

- [Harvard \(author-date\)](#)
- [Turabian](#)

Submission

Online

Submission Instructions

Your submission will be shared with staff and students.

Learning Outcomes Assessed

- Prepare professional project documents that convey the processes and outcomes of your project
- Communicate your project outcomes to project adviser(s), other stakeholders and the wider community.

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Team Work
- Information Technology Competence
- Cross Cultural Competence
- Ethical practice

4 Final Thesis Presentation

Assessment Type

Presentation

Task Description

Prepare a ten-minute presentation to explain your Thesis holistically. Deliver your presentation at the CQU Engineering Showcase on Wednesday Week 12. You are required to present in-person at one of the CQU Engineering campuses in Queensland; i.e. Bundaberg, Cairns City, Gladstone Marina, Mackay Ooralea or Rockhampton North. You may decide to present at any campus. A registration form is on Moodle. No extensions are possible - missed presentation are rescheduled to the following Engineering Showcase in the next term of offering.

Assessment Due Date

Present on Wednesday of Week 12 during your allocated session in the program.

Return Date to Students

Feedback is provided at Certification of Grades.

Weighting

10%

Minimum mark or grade

50%

Assessment Criteria

Presentations are marked on a five-point scale from Unacceptable to Excellent or Strongly Disagree to Strongly Agree. The criteria are:

- The need for the project is convincingly stated (formative)
- The aim and objectives are clear, concise, and sensible (formative)
- The adopted methodology is suitable for the aim and objectives, and for a graduate (formative)
- The key results are visually prepared using sensible tables, figures, photos, or the correct types of graphs (formative)
- All text is legible, with all values having sensible precision and the correct units (formative)
- The conclusions and recommendations close out the entire project (formative)
- Delivery of the presentation was at the professional standard (formative)
- The presentation was of a suitable duration and the time was used wisely (formative)
- Answers to any questions demonstrate thorough knowledge of the project - optional - (formative)
- The overall grade based on formative criteria scores and academic judgement (**summative**)

Markers may also include comments on suggested improvements if not discussed during the session. Students should take notes of all feedback provided during the session.

Referencing Style

- [Harvard \(author-date\)](#)
- [Turabian](#)

Submission

Online

Submission Instructions

Please submit your PowerPoint prior to your session to facilitate solving any issues with accessing slides during your session.

Learning Outcomes Assessed

- Apply and reflect on Engineers Australia's Stage One Competencies for Professional Engineers to the planning and implementation phases of engineering projects
- Think critically, demonstrate sound analysis and make rational judgements and decisions in the implementation phases of your project
- Communicate your project outcomes to project adviser(s), other stakeholders and the wider community.

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Team Work
- Information Technology Competence
- Cross Cultural Competence
- Ethical practice

5 Thesis

Assessment Type

Thesis/Dissertation

Task Description

Prepare a Thesis which communicates your project and results effectively. The first appendix of your thesis should contain your reflections on your attainment of the Engineers Australia's Stage One Competencies and demonstrate that you have applied a substantial degree of Engineers Australia's Stage One Competencies to the implementation phases of your project. Your thesis should be structured as follows with each section starting on a new page:

- Title page
- Summary
- Acknowledgments
- Table of Contents
- List of Figures
- List of Tables
- Glossary/Nomenclature
- Introduction to the Project and Thesis
- Literature Review
- Project Methodology Review
- Results and Discussion

- Conclusion
- Appendix 1 - Reflections on your attainment of Engineers Australia's Stage One Competencies
- Other appendices as appropriate (please note that other appendices will not be graded)

Further guidance and other resources are available in Moodle.

Assessment Due Date

Review/Exam Week Wednesday (13 Oct 2021) 10:00 pm AEST

Return Date to Students

Feedback is provided at Certification of Grades.

Weighting

60%

Minimum mark or grade

50%

Assessment Criteria

Moodle contains a Marking Rubric with expectations given through indicators of attainment at various grading levels for all criteria. Understanding the marking rubric is critical to pass this unit. Students should look at the rubric before starting the assessment while working on the assessment, and as a final check before submitting.

Referencing Style

- [Harvard \(author-date\)](#)
- [Turabian](#)

Submission

Online

Submission Instructions

Submit as a single PDF.

Learning Outcomes Assessed

- Apply and reflect on Engineers Australia's Stage One Competencies for Professional Engineers to the planning and implementation phases of engineering projects
- Think critically, demonstrate sound analysis and make rational judgements and decisions in the implementation phases of your project
- Prepare professional project documents that convey the processes and outcomes of your project

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Team Work
- Information Technology Competence
- Cross Cultural Competence
- Ethical practice

Academic Integrity Statement

As a CQUniversity student you are expected to act honestly in all aspects of your academic work.

Any assessable work undertaken or submitted for review or assessment must be your own work. Assessable work is any type of work you do to meet the assessment requirements in the unit, including draft work submitted for review and feedback and final work to be assessed.

When you use the ideas, words or data of others in your assessment, you must thoroughly and clearly acknowledge the source of this information by using the correct referencing style for your unit. Using others' work without proper acknowledgement may be considered a form of intellectual dishonesty.

Participating honestly, respectfully, responsibly, and fairly in your university study ensures the CQUniversity qualification you earn will be valued as a true indication of your individual academic achievement and will continue to receive the respect and recognition it deserves.

As a student, you are responsible for reading and following CQUniversity's policies, including the [Student Academic Integrity Policy and Procedure](#). This policy sets out CQUniversity's expectations of you to act with integrity, examples of academic integrity breaches to avoid, the processes used to address alleged breaches of academic integrity, and potential penalties.

What is a breach of academic integrity?

A breach of academic integrity includes but is not limited to plagiarism, self-plagiarism, collusion, cheating, contract cheating, and academic misconduct. The Student Academic Integrity Policy and Procedure defines what these terms mean and gives examples.

Why is academic integrity important?

A breach of academic integrity may result in one or more penalties, including suspension or even expulsion from the University. It can also have negative implications for student visas and future enrolment at CQUniversity or elsewhere. Students who engage in contract cheating also risk being blackmailed by contract cheating services.

Where can I get assistance?

For academic advice and guidance, the [Academic Learning Centre \(ALC\)](#) can support you in becoming confident in completing assessments with integrity and of high standard.

What can you do to act with integrity?



Be Honest

If your assessment task is done by someone else, it would be dishonest of you to claim it as your own



Seek Help

If you are not sure about how to cite or reference in essays, reports etc, then seek help from your lecturer, the library or the Academic Learning Centre (ALC)



Produce Original Work

Originality comes from your ability to read widely, think critically, and apply your gained knowledge to address a question or problem