

# CEEDWA

## Co-operative Education for Enterprise Development

### 2020-2021 Student Manual

This manual is produced for the use of students conducting their projects under the Co-operative Education for Enterprise Development (CEED) program at The University of Western Australia and Curtin University. Separate manuals are produced for Client Mentors and the Academic Supervisors of CEED projects

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# Contents

<b>1. Executive Summary .....</b>	<b>1-1</b>
<b>2. Introduction.....</b>	<b>2-1</b>
Requirements of CEED projects .....	2-1
Measurement of success in CEED.....	2-2
<b>3. Project Supervision .....</b>	<b>3-1</b>
<b>4. Planning for Success .....</b>	<b>4-1</b>
The importance of planning.....	4-1
Gathering Information.....	4-3
<b>5. Project Brief .....</b>	<b>5-1</b>
What is the Project Brief?.....	5-1
The Project Brief in detail.....	5-2
Project Brief Preparation and Sign Off.....	5-10
<b>6. Getting Started.....</b>	<b>6-1</b>
Early meetings with the CEED Client .....	6-1
Check list for initial meeting with Mentor.....	6-2
Project preparation.....	6-3
<b>7. Work Scheduling.....</b>	<b>7-1</b>
Keep your Gantt chart up to date.....	7-2
Preparing your Gantt chart.....	7-2
<b>8. Communication.....</b>	<b>8-1</b>
Importance of Communication.....	8-1
More effective communication .....	8-1
Monthly written progress reports.....	8-2
Communication with the CEED Office .....	8-2
In case of problems.....	8-2
<b>9. Work Your Network.....</b>	<b>9-1</b>
Build your Network.....	9-1
Extending your network .....	9-1
Making better use of your network .....	9-2
<b>10. Workload .....</b>	<b>10-1</b>
Work Location .....	10-1
Workload Expectations for Final-Year/Honours CEED research projects.....	10-1
<b>11. Talks and Seminars .....</b>	<b>11-1</b>
Presentations .....	11-1
CEED Seminar .....	11-1
CEED Seminar Papers.....	11-2
Seminar presentations.....	11-2
<b>12. Project Agreement.....</b>	<b>12-5</b>
CEED student agreement .....	12-5
Confidentiality.....	12-5
Intellectual Property.....	12-5

<b>13. Project Expenses .....</b>	<b>13-1</b>
Responsibility .....	13-1
Minor Deliverable Preparation Expenses .....	13-1
Travel expenses .....	13-2
Project expenditure through the university .....	13-2
Specific procedures for expenditure .....	13-2
1. Incur expenditure through the CEED Client.....	13-2
2. Work by the university or others on "fixed price" .....	13-3
3. Work by the university on "time and materials" basis .....	13-3
<b>14. Insurance and Safety .....</b>	<b>14-1</b>
Insurance .....	14-1
Insurance while employed by the CEED Client .....	14-1
Safety on site.....	14-1
<b>15. Studentship.....</b>	<b>15-1</b>
Arrangement for Studentship.....	15-1
Students with another scholarship or cadetship .....	15-2
CEED Studentships and Youth Allowance/Austudy .....	15-2
Conditions of Tax-Exempt CEED Studentships.....	15-2
<b>16. Arrangements for Site Work.....</b>	<b>16-1</b>
Opportunity with site work .....	16-1
Site work dates and status .....	16-1
Extending or changing the site period .....	16-1
Expectations during site work.....	16-2
Course Requirements for Professional Practicum .....	16-2
<b>17. Research and Assessment .....</b>	<b>17-1</b>
Academic assessment.....	17-1
Features of a Good Research Project and Thesis .....	17-1
Identifying the knowledge bases for your work.....	17-1
Mentor approval of thesis.....	17-4
<b>18. Project Close Out.....</b>	<b>18-1</b>
Introduction .....	18-1
Deliverables .....	18-1
Close Out Meeting .....	18-2
Drop by the CEED Office! .....	18-2
<b>19. Advice from Past Students .....</b>	<b>19-1</b>
Introduction .....	19-1
Communication.....	19-1
Initiative and Perseverance.....	19-1
Guidance and Networking.....	19-2
Planning.....	19-3
Project Brief.....	19-4
Documenting .....	19-4
Scheduling & Time Management.....	19-5
Thesis.....	19-6
Extra Suggestions Resulting from CEED Student Feedback .....	19-7

# 1. Executive Summary

- **CEED Projects combine your academic project with research effort commissioned by a CEED Client.**
- **Working on your project with a CEED Client provides unparalleled experience, but imposes extra demands.**
- **This Executive Summary is a “must read”.**

## Introduction

CEED projects link academic projects with research commissioned by CEED Clients. You will need to work closely with your CEED Client Mentor(s) and your Academic Supervisor(s) to manage your project. Effective communication is essential and requires continuous attention.

Full CEED projects include a period of time spent working on your project at the Client's premises during University vacations.

How you handle your CEED project influences others' opinion of your school, the university, and yourself. It is not enough to be good at what you do, you must be seen to be good!

## Project Supervision

Your Academic Supervisor provides academic supervision. Input and guidance from the CEED Client is provided via a "Mentor". Your client Mentor in particular should appoint deputies to assist you when their many commitments require their absence.

## Planning for Success

The first and most vital part of your project is the initial literature review, discussions, negotiation and planning. Results of this are encapsulated in the "Project Brief" which defines project benefit to the Client and your activities. This must be done early so you can confidently begin work on your project.

## The Project Brief

The Project Brief defines and agrees the potential benefits to the client from your completed research, responsibilities, and commitments associated with the project for all parties. The Project Brief must be completed within 10-12 weeks of starting your project. The Project Brief is produced by you, and formally signed by the Client Mentor, Academic Supervisor, yourself and the CEED Office.

## Getting Started

Important strategies discussed in this section will help you clarify project outcomes, and agree on how your team will communicate and interact during the project. There is a detailed list of important questions to ask your Client Mentor.

## Work Scheduling

Organising your time and the resources necessary for your CEED project will be demanding. This section offers a simple method for handling this.

## Communication

Communication is a vital key to the success of CEED projects. Keep all parties informed at all times. As a minimum, you are required to present brief written reports monthly to your Client Mentor, Academic Supervisor(s), and the CEED Office.

## Develop Your Network

Creating an environment where you can succeed requires consciously developing the “network” of people who will help you. This section contains useful tips on how to increase your effectiveness.

## Workload

You will need to plan and manage your workload carefully during any on-site period and especially during the academic semester. You should spend 1.25 – 1.5 days per week on your CEED project during the semester if it represents  $\frac{1}{4}$  of your academic load (proportionally more if it is a greater proportion of your load).

## Talks and Seminars

CEED requires students to present at the CEED seminar, and you can expect to present multiple times at your client’s premises. These opportunities offer extra career development opportunities. In this section, presentation techniques and pitfalls will be reviewed.

## Project Agreement

CEED projects have a formal Project Agreement between UWA and the CEED Client. You will have already signed a Project Acceptance and an addendum to the Agreement (Student Undertaking) to acknowledge your responsibilities. The Agreement also contains provisions for handling issues of Intellectual Property (IP) and confidentiality. Some CEED Clients may agree to pay a fee surcharge to obtain full ownership of IP produced by the project. In this case, your Studentship is increased as compensation for the concession.

## Project Expenses

A small sum is budgeted for your minor project expenses. What this covers and how it may be extended is shown in this section. Your project may also incur costs recoverable from the CEED Client. Minimise the effort by adopting the approaches outlined. All extra expenditure, including travel expenses, must have prior written approval from the CEED Client.

## Insurance and Safety

Insurance issues are important, so be sure to check this section. You are not an employee of the CEED Client, even during the period working on your project at their site. The university provides indemnity for the CEED Client while you are on site - provided you are not employed. Any periods of “employment” arranged between yourself and the CEED Client must therefore be clearly identified in advance to avoid problems with insurance liability.

## Studentship

You will receive a tax-free Studentship as part of your project. Details of payment times and implications for tax and Government study support are given in this section. Payments are conditional upon your making satisfactory progress on the project and being up-to-date with monthly reports.

## Arrangements for Site Work

You are responsible for arranging site work dates with your Client Mentor. Some flexibility is allowed, as discussed in this section.

### **Managing Your Research Project**

Academic assessment for CEED projects differs little from the norm. Extra time and resources you may have had could influence expectations. This section also contains some useful information on how to manage your project and produce a good thesis.

### **Project Close Out**

Completing the final steps of your project professionally is essential in ensuring the legacy of your work and reputation.

### **Advice from Past Students**

Get some powerful hints from students who have already travelled the road you are following.

## 2. Introduction

- **Undertaking a CEED project is an opportunity and a privilege.**
- **You are working on a project with immediate business value and implication.**
- **Working in a real professional environment with, opportunities to develop your communication and people skills as well as your technical skills.**
- **Be continuously aware of what others expect of you.**
- **Your attitude will affect how others perceive your performance.**

Congratulations on your appointment as a CEED scholar! Your CEED project is in many respects a typical academic project, but you have an opportunity available to only a fortunate few students. This manual is designed to equip you to make the most of that opportunity.

1. CEED projects require more work than standard projects, but offer greater and broader experience. You can expect to make much greater progress than is possible with regular projects, and you will have more responsibility.
2. You have been successful in your course to date, and have been awarded your CEED project in competition with other students. We are confident you can do an excellent job with your CEED project, but first you need to know how success is defined in CEED projects.

### Requirements of CEED projects

#### 1. Professional attitude and approach

CEED projects require you to operate as a professional in your chosen field. You will need to liaise with a number of people to carry out your work. This is true for most professional situations, but not always evident in academic studies. Apart from your Academic Supervisor, as a CEED scholar you will also be accountable to your CEED Client Mentor and the CEED Office.

#### 2. Formal research partnership and deliverables

As a CEED scholar you will effectively be a researcher working on behalf of the CEED Client. In contrast to conventional projects, you will have agreed deliverables to provide to the client. These deliverables will need to be presented in a form suitable for the Client's use.

#### 3. Academic demands

In addition to meeting your CEED obligations, you must meet all of the requirements of the academic research project unit that you are enrolled in. In general, an academic research project unit will require you to demonstrate your ability to:

- a. Find, review and assess critically the past work of others in the field;
- b. Design and conduct experimental or other work to test some hypothesis;

- c. Analyse results, draw sensible conclusions and recommend further work;
- d. Write a concise, well structured, coherent, and comprehensive report on your work.

Remember, your *academic performance* will be assessed on criteria like these, rather than the value of your work to the CEED Client (which is an additional goal with CEED projects).

#### 4. External demands

Your CEED project gives you an opportunity to demonstrate your capabilities to staff at your CEED client. Your performance will reflect on you, your school, and the University as a whole. You will need to demonstrate skill in managing your project, including an ability to accommodate the CEED Client's administrative needs (e.g. accounting and reporting).

### Measurement of success in CEED

To be successful within its broader context, your CEED project needs to meet the needs, *real and perceived*, of the various people and organizations involved. Will your Client Mentor, the CEED Client's management, and the University, be glad you worked on the project? If the answer is a definite "yes", you will have successfully completed your CEED project. You will have developed and demonstrated capabilities which will stand you in good stead, no matter what career you choose.

Your CEED project will stretch your planning skills. However, its time-scale will afford you greater flexibility in planning, and make your project less susceptible to delays. Your attitude and willingness to plan carefully will make all the difference. You will gain the confidence and respect of all parties if you handle your project in a professional manner. This manual is designed to help you achieve that.

### 3. Project Supervision

- **You will receive guidance and help from your Supervisor(s) and your CEED Client Mentor.**
- **It is your responsibility to ensure this is effective.**
- **Get to know the strengths and limitations of your advisors.**
- **Expect to be the "initiator" in your dealings with others.**

**You** are responsible for your project. The success of the project will depend on your initiative and effort.

In addition to any other CEED students engaged upon the same project, your team comprises yourself, one or more Academic Supervisors, and a CEED Client "Mentor(s)" (each of whom is asked to appoint a deputy).

Your Academic Supervisor(s) will be your primary guide and will be involved in assessing your thesis. It is vital to maintain regular contact with this person (eg at least fortnightly), *even when you are working on site*.

If your (lead) Academic Supervisor is going to be absent for any period of time, you should ask your Academic Supervisor to nominate a deputy. This is especially important if you only have one Academic Supervisor. Unless specifically requested, you do not need to keep your Deputy Supervisor informed of progress.

Your CEED project topic (proposed by the CEED Client) may not fall completely within your Academic Supervisors' area of expertise. You should aim to become the most knowledgeable person in the project team on your topic. This means you must plan very carefully. Your Academic Supervisor(s) will have considerable expertise in such planning, so seek regular advice.

Your Client Mentor is your initial contact with the CEED Client, and will arrange for resources to be made available to you. Be sure to ask in good time, and allow plenty of time for the necessary budgeting and administrative arrangements. Your Client Mentor will probably be required to report regularly on your progress, so make that easy by keeping your Client Mentor informed of progress and planning at all times.

Your Client Mentor may or may not be an expert on your project topic. The Client Mentor's task is to help you to define your project and its interfaces with other CEED Client activities, and ensure you receive input in relevant areas of their expertise. *This will occur only at your request*, so make sure your needs are known and understood. It is best to put such requests in writing (via email) including the date by which you need a response.

The CEED Client's staff generally will want to help you succeed with your project but, if you do not tell them what you need, they will not know. Always be willing to ask, but remember, they are often busy with matters of higher priority (to them) than your project. Gentle and courteous reminders are appropriate, so long as you consider the other person's needs and commitments.

## 4. Planning for Success

- **Failing to plan is planning to fail.**
- **Establishing clear targets and making plans to meet them is essential for success.**
- **You should undertake a review of literature in your project area as a first step.**
- **Obtaining even basic project information, both from the CEED Client and from the literature will require initiative.**
- **Use the "Project Brief" to clearly identify all agreed Deliverables, desired client benefits, and required resources.**

### The importance of planning

You have already developed many skills during your university course, including the ability to plan and manage your study workload. Planning your CEED project is crucial to its success, and represents another step in your development as a professional.

Your project must satisfy the needs of more than one party:

- You need to demonstrate your academic capabilities, and
- Your CEED Client needs to see real progress in the research, and expects certain deliverables to be achieved.

Both requirements must be met. Achieving this will require you to develop precise objectives for your project, and have a clear understanding of which parts satisfy each need.

You will need to consult with your Client Mentor to determine the Deliverables the CEED Client wants from your project, and how the Client would like to benefit from the application of your findings and recommendations. Check immediately with your Academic Supervisor(s) that the process of generating these Deliverables will provide sufficient challenges to meet your academic assessment goals. Should there be insufficient academic hurdles, discuss with your Academic Supervisor(s) the addition of extra material and objectives. Most CEED Clients have no problem with this, and are happy to accommodate such needs. Make sure any such additions are tailored to obtain maximum benefit to the CEED Client.

### Laying the Fundamental Groundwork – Research the Topic!

The first step in any research effort is to undertake a thorough review of the literature in the project area. A literature review is an essential element of a well-rounded thesis, and provides the impetus for a well-founded research project.

This review should continue as you accumulate experience throughout your project, but the early stages of the review are critical to the planning process. By becoming knowledgeable on your project topic at an

early stage, you will be able to ask well-informed questions of your CEED Client and Academic Supervisor(s) during the planning process.

In addition to the obvious head start this will give you in developing the Project Brief, displaying a knowledge of the topic will impress the CEED Client and give them confidence in your ability to undertake the project. Earning this positive early impression can enhance your project by raising the CEED Client's enthusiasm for you and the project, and may help get you access to additional human and logistical resources as the project proceeds (people want to work with people who are putting in the effort and doing good work!).

Nowadays, there are powerful tools available to support a literature review. The most basic of these are search engines such as Google. Even Wikipedia can help in identifying publications and experts in a particular field. It must be **stressed** that these sources should only be used as an **initial guide**; it is generally not acceptable to reference web sites in a thesis, due to the inconsistency of the reviewing of posted material (for example, it is easy to at least temporarily post false information on Wikipedia, and there are virtually no controls on blogs and other media sites).

It is generally preferable to use published materials such as books, conference proceedings and (especially) peer-reviewed journal articles as your references. The library makes available a wide variety of books and journals, including a large number of journals in electronic form (which permits the easy downloading of papers in pdf form; it's not that long ago that students were consigned to long afternoons of photocopying from dusty old journals).

The library makes available a variety of web based databases that can be used to search for journal articles, books, and conference proceedings dealing with advanced scientific research. These may be accessed via the "OneSearch" link on the UWA library's main web page ([onesearch.library.uwa.edu.au](http://onesearch.library.uwa.edu.au)). For engineering, for example, two of the major indexes are "Compendex" and the "Web of Science"; both are available at UWA. For other specialities, equivalent databases are available.

Both Compendex and Web of Science provide a relatively intuitive search engine for technical papers – you may search by keyword, author, or title, amongst many options. The result will be a list of papers drawn from a database including the vast majority of scientific journals. Both are accessed simply by typing their names onto OneSearch – then click the "Available Online" link that appears with the search results and follow through. You may need to log in using your PHEME password to access the resources (especially if you are off campus).

The effort in accessing Web of Science is worth it, as it is a powerful tool in the hands of an expert researcher. The "Web of Science" database provides a Citation index – so in addition to merely identifying papers, it will tell you how many times they have been cited. This is an important indicator of the importance of a paper for experts in the field. It also permits you to list the papers that have cited a particular paper – when you identify an older, fundamental paper, this can be a very useful tool, as you can follow the citation trail to get the latest thinking and data that has emerged in a particular area.

The important thing to remember when undertaking a literature review is that the word "review" is important – it is essential to read the material found carefully and critically. You must determine how directly the material applies to your own work (Were the conditions the same? How has the field changed? Is

your work heading in a new direction?). A good paper or book chapter will also be well supported by references, and in reviewing those references, you can often identify older, more fundamental, material that can help you better understand the topic.

As an important aside - do not limit your consideration of literature to recent works. Older, seminal works are often extremely useful. Often fields evolve their own jargon over time, and the work becomes increasingly specialized. Fundamental papers, especially those in which an area is addressed for the first time, can often make it easier to understand a field – being the first time that a phenomenon is described, the language and terminology can be easier for lay reader to absorb, and the fundamental theory is often more clearly laid out. The basis and limits of a particular approach can also often be more clearly identified in the original papers. So don't ignore the dusty old journals! In many fields, the basis of current thinking was laid out a long time ago. In the words of Sir Isaac Newton -

*“If I have seen farther than others, it is because I have stood on the shoulders of giants.”*

## Gathering Information

Gathering information needed to plan and undertake your project can, in some cases, be quite demanding. CEED Clients' understanding of what the project involves may be clear, but in some cases will only become clear after some investigation has been undertaken. Some know exactly what their desired outcomes are (what they want to achieve), and can give you a precise definition. More often they are not sure what the project can achieve, or may be unclear in the exact questions that should be asked.

This can be a challenge for CEED Scholars – in almost all of your education to date you have been set well-defined problems and outcomes (often with all the required information neatly packaged with the problem). It is, however, a characteristic of professional reality, as you will work in environments where different groups have different priorities and and/or understanding of the issues at hand. Gathering information will accordingly be an essential element of bringing the project stakeholders into alignment and defining the desired deliverables.

Sifting through the facts and defining the problem should not be regarded as an imposition; rather, it is a vital part of your project! It has a valid place in your final thesis/report and should be approached with enthusiasm and urgency.

Even if you receive a firm definition of the problem from your Client Mentor, you should always be mindful of ensuring that the resulting outcomes are appropriate to the CEED Client's needs. Any perceived conflicts should be discussed with your Client Mentor as they arise.

## 5. Project Brief

- **The Project Brief contractually defines the scope of your project.**
- **It records desired benefits, undertakings and responsibilities.**
- **Special requirements, such as confidentiality, are identified in the Project Brief.**
- **Methods of interaction are defined in the Project Brief.**
- **Your Project Brief may need updating during the project.**

### What is the Project Brief?

Your *Project Brief* is critical to the success of your CEED project. It is so important that your first studentship payment is conditional upon receipt of a *Project Brief* that has been signed by all parties. In developing your Project Brief, you will need to address some big picture issues that relate to your project as well as the details of the project itself.

Your first major CEED project task is to develop a tight definition of the project in consultation with your Client Mentor and Academic Supervisor. Your initial literature review will help to inform these consultations. Remember that you are the person responsible for developing and managing your CEED Project Brief – no-one else! Others are vitally interested, but you are the creative author and in charge.

The Project Brief defines the topic and scope of your project. It:

- summarises the background to the issue, in the literature and within the client organization;
- defines the objectives to be achieved, and the desired bottom line benefits that the client wishes to derive from achieving those objectives;
- defines the methodology to be used to achieve the objectives;
- defines the project timeline and milestones;
- identifies which parties are to provide the necessary resources;
- identifies interfaces with other parties, be they suppliers of physical resources, finance, or information;
- sets out the procedures by which publications and presentations are to be approved for public release;
- defines the nature and format of the project deliverables;
- **Perhaps most importantly, provides you with a plan to co-ordinate your project effectively.**

Your Project Brief is signed by you, your Client Mentor, your Academic Supervisor(s), and the CEED office to signify that the entire team is of one mind about the whole project. **Signatures must not be sought until all parties have agreed to that the brief is ready for signature.**

In some respects, the process of preparing your Project Brief is a marketing opportunity. It is your first opportunity to demonstrate to a potential employer your capabilities - especially your abilities to embrace a new environment, communicate, and work consultatively. Do not miss this opportunity!

To assist you a Project Brief template is supplied on the CEED website at <http://ceed.wa.edu.au/project-materials-for-scholars/> , and each section is explained below. The headings and sub-headings apply to all projects in all Schools. All must be addressed.

Expect that the development of the Project Brief will require more than one draft. You should consult with your Academic Supervisor(s) and Client Mentor during the development of the first draft. This is an important opportunity to test out ideas and raise issues. Once the draft is complete (i.e., once it has reached a stage where it is complete and you believe that no further changes are required), it should be circulated to your Academic Supervisor, Client Mentor and the CEED Office.

As your Client Mentor, Academic Supervisor(s) and the CEED Office are required to sign the final version, they will review it to determine whether they are ready to sign off on the content. **Do not** seek any signatures on your Brief **until** you have reached the stage where it is considered satisfactory by **all** parties and the CEED Office approve the signature collection stage.

Students sometimes discover, after the *Project Brief* is signed off, that it would be desirable to change something significantly from what has been agreed. If this happens it is the student's responsibility to write an Addendum, and seek agreement and signature by their Client Mentor, Academic Supervisor and CEED Office. This avoids painful disagreements and disputes later about what was supposed to be done.

## The Project Brief in detail

The template for the Project Brief is available at the CEED website. Instructions for the individual sections are included in that template, and are summarised here.

### Cover Page

This page is intended to be a standalone document as well as being a cover sheet for the detailed Project Brief. It is NOT an introduction to the Project Brief. Your Client Mentor should be able to circulate to leaders in their organisation, so that they can get a snapshot of what you are doing. It gives the following information:

- Project title & CEED Project number;
- Client organisation;
- Summary project description (which should identify the project Deliverables, and the potential benefits to the client);
- Student;
- Client Mentor(s);
- Academic Supervisor(s).

The project summary provides a clear, concise summary of the project. It should briefly identify the reasons for undertaking the project (with emphasis on relating those reasons to the needs of the client enterprise), the objectives of the project, and the business value realized by the client enterprise in achieving those objectives. It should then proceed to identify the methods by which the objectives will be achieved, and the total costs that may be expected (excluding the original project fee). The key Deliverables must also be identified. The length of the summary **must** be limited to ensure that the summary, the headings above, and the names below appear together on the cover page.

## Section 1 - Project Background

### 1.1 Problem Statement

The problem statement describes the specific issue (or issues) to be addressed by the project. The nature of this statement will obviously vary according to the nature of the issues. For technical problems, it may be appropriate to incorporate diagrams, graphs or tables illustrating the nature of the problem. For business and financial investigations, it may be useful to present relevant financial data.

This section should also discuss the implications of the issue for the client organisation. For operational problems in a plant, this may include environmental, health and safety issues, potential production loss, or maintenance requirements. For a design problem, the project may investigate improvements that allow the Client to compete more effectively or enter a new market. For projects dealing with organisational practices, the problem may affect the efficiency or effectiveness of operations or the delivery of services. In other cases, the project may simply help the Client develop a thorough understanding of an issue, which will help guide future policy formulation or planning.

### 1.2 Background Information

This section should consider existing knowledge related to the issue that will affect the progress of the project. If not already covered adequately in the problem statement, this section should start by summarising the current situation of the Client.

- How is the issue presently being handled?
- What is the current understanding of the issue?

You should then proceed to discuss the history of the issue in the Client organisation or other affected stakeholders (internal and external organisations, communities).

- How has the past history influenced the current situation at the Client?
- How did the issue develop?
- Have previous attempts been made to address the issue, and, if so, how successful have those attempts been?

Tracking down and discussing this history is critical if your project is to avoid “reinventing the wheel”.

You should then go on to discuss any relevant information that you have gathered through the early stages of your literature review. If there alternate technologies that are to be considered, they should be described here. If similar studies have been reported in the literature, their findings should be summarised here.

### 1.3 Current and Future Client Environment

In planning a project, it is important to understand the ways in which the current environment at the Client organisation can affect the project, and can influence the motivations for undertaking the project.

- Does the client have access to a new piece of technology that can be applied to the project?
- Is there a particular group of staff available to support the project?
- Has new data become available that has not been previously been available for consideration?

- Have new motivations emerged for pursuing an issue? For example, a Client may have adopted a “carbon neutral” approach that dictates the retirement of old technology.
- Are any organisational changes expected to occur in the project time frame?

It is also critical to understand the environment in which the project’s findings and Deliverables will operate, and to consider any expected changes in that environment.

- Is new equipment scheduled to come online?
- Will new data become available?
- Are plant upgrades likely?
- Could political or legislative change affect organisational policy?
- Are operations subject to fluctuations in the price of a commodity?
- Is an organisational restructure, or a change in ownership, likely to occur in the foreseeable future?
- Will client staff require additional training in order to effectively implement your recommendations?

Any expected changes should be taken into account in the formulation of the project Deliverables and Project Brief.

*As an example, in one previous CEED project the objective was to provide a framework for deciding between two options. During the course of the project, it was necessary to base that decision on assumed data (or data sourced from the literature). However, it was known that the Client organisation was establishing a new working group that would gather hard experimental data over the next several years. As a result, the decision framework was designed in a way that permitted it to be used in conjunction with the “hard” data as it became available in subsequent years.*

## Section 2 - Project Objectives and Benefits Analysis

### 2.1 Objectives

This section will describe in detail the specific objectives to be pursued by the current CEED project. The importance of each objective should be assessed in the context of the background material provided in Section 1.

*Note the difference – Section 1 will define the full scope of the issue. Section 2.1 will discuss specifically what is to be addressed in this project.*

### 2.2 Benefits Analysis

This is one of the most important elements of this (or indeed any) Project Brief. You must describe the business value that will be realized through the implementation of the project Deliverables, taking into account the form in which those benefits will be realized by the Client.

In many cases, this will entail assessing the positive financial consequences of achieving the objectives (or, conversely, the negative consequences of failing to address the issue). In such cases, examples would include:

- Cost savings expected from an improvement in practice;
- The cost of production losses that may be incurred if the issue is not addressed;
- A reduction in manufacturing costs per unit, and thus an improvement in the competitiveness of the manufactured goods;
- The impact on one or more of the client's Key Performance Measures;
- An increase in sales, market share and/or net profit.

The benefits sought will not always be exclusively financial in nature:

- An environmental, health or safety issue may need to be addressed, or an assessment may need to be made to determine whether there is an emerging EHS issue;
- By assessing current practice, a project may enable more efficient deployment of resources; as an example, for government organisations, there may not be a profit motive, but more efficient deployment of resources may help the organisation improve the delivery of services for a given budget (for example, road improvements may reduce accident rates; targeted police deployment may reduce the number of offences committed, etc);
- The provision of an accurate report may enable the formulation of equitable policies in future (for example, a review of regional indigenous history may guide the assessment of native title claims and negotiations).

It should be noted that in many cases the benefits may be a combination of financial and non-financial benefits:

- In environmental issues, the direct benefit may be in reducing emissions to an acceptable level, but there will be ultimate financial benefit in that plant may be forced to shut due to excessive emissions;
- In safety issues, it may be essential to eliminate a safety hazard, but again there will be financial benefit in that accidents usually force plants to suspend operations at least temporarily.

In light of the current and future environment at the Client Enterprise, the project Deliverables, and the associated benefits, will generally have a finite life. You should discuss the expected future life of the Deliverables and benefits within the client organisation:

- Are there any specific conditions that will limit the useful life of the Deliverables? Are these conditions likely to emerge or change?
- How may the Deliverables be adapted to extend their life as the client environment changes?
- Are there future changes that will enhance the benefits realized? Will the Deliverables enable the client to take advantage of anticipated changes in circumstances?

## Section 3 - Project Execution Plan

### 3.1 Methodology

This section describes the "process" by which the project objectives are to be achieved. The nature of this process will vary according to the type of project, but for all projects you should break down the project into specific tasks, and describe the approach that will be taken to accomplishing each task.

It is important that you provide extensive and specific detail on the technical and logistical aspects of the planned process. For experimental tasks, describe the experimental equipment and specific techniques that will be employed – it's not enough to say "testing will be done". You must address:

- The test method (e.g. is a standard test method being applied);
- The number of tests to be undertaken;
- The number of specimens to be created/collected;
- The test timeframe (this may be critical if the experiment is in an operating process).

For modelling tasks, identify the software packages and computing resources that will be used, or the platform for the development of any new software. For theoretical tasks, identify the approaches under consideration or that will be developed. For design tasks, identify the tools or approaches to be used for each task. For literature review tasks, identify the databases/indexes and bodies of literature that will drive the review. Obviously, a single project will often include examples of each of these types of task.

For CEED projects, it is important to identify any constraints imposed on the methodology due to the needs of the Client. Examples of such constraints would include:

- The use of a specific type of test (due to the Client's need to comply with organisational or regulatory requirements);
- The use of specific modelling software (such as Finite Element or CFD packages);
- The use of specific standards (to comply with Client practice);
- The use of specific programming languages or tools (to comply with the tools available at the Client).

### 3.2 Project Timeline (Gantt Chart)

The project timeline describes the sequence of tasks, and the expected initiation and completion dates for each task. A graphical approach, in particular a Gantt chart, is usually the best way to describe the project timeline, and as such is required in the brief. It is important to identify the tasks that form the critical path for the project, and to take particular care in the scheduling and management of these tasks.

The focus here should be on the research tasks – a common failing is to focus too heavily on unit submissions. Assessment items are of course important, but the research is more important – without it you have nothing to submit! At least 75% of the tasks in your timeline and milestones should be research tasks – if more than 25% of the items relate to assessment or administrative submissions, the balance is wrong.

You should break the larger tasks down into smaller sub-tasks – ideally 1-2 weeks in duration. Being able to track progress is important – both in terms of making sure that you are sticking to your timeline, but more importantly in terms of feeling that you are making progress. Students often find the widely spaced deadlines of research projects daunting – that feeling of progress can greatly help your state of mind during the project.

In the text, you should provide in list or tabular form a summary of the key project milestones and dates. You must also provide text discussing any key constraints on the proposed timeline:

- The availability of test equipment;
- Lead times for expenditure approval and /or equipment delivery;
- The availability of personnel to assist in data collection;
- Times that a particular site can or cannot be accessed;
- Absences of the Client Mentors or Academic Supervisors;
- Lead times for client approvals of publications (the conference paper and thesis).

### 3.3 Resources

It is important to identify the resources needed to accomplish the processes described in section 3.1. It is critical to provide a breakdown of who will be providing each resource (UWA or Client) – there's no point specifying a test that neither party is capable of doing or arranging. Be sure to discuss the plan with your Client Mentor and Academic Supervisor, to make sure there are no misunderstandings as to the availability of equipment. You should also identify whether resources are currently in place, or whether they will be developed during the course of the project.

Provide a detailed breakdown of any costs to be incurred, including an estimate of the costs (as refined an estimate as can be made at the time of writing). **Note that the client will have to agree in advance to any expenditure before it can be incurred.** Also note any constraints imposed on the cost, such as any upper limit imposed on the total project budget by the client.

### 3.4 Risk Management

One of the most important elements of project management is to understand potential problems, or "risks", that may affect the project, and to identify "risk management" strategies to eliminate or mitigate these risks. Research projects are subject to a variety of factors that can hinder a CEED scholar's progress, such as:

- Failure or unavailability of critical experimental equipment;
- Unavailability of data or facilities at partner organisations;
- Changes in the business situation of industrial partners;
- Failure of a key technique to deliver the results needed to achieve the objectives;
- Extended absence of the Academic Supervisor or other key personnel;
- Delays in workshop fabrication;
- Unavailability of funds to create experimental facilities;
- Loss of data (through computer failure).

By recognising risks and developing risks management strategies at an early stage, you overcome apparently catastrophic circumstances to deliver a successful project. Indeed, simply being aware of the risks may enable you to avoid the most catastrophic circumstances. Risk management approaches could include:

- Developing alternate plans or objectives in the event of equipment loss;
- Identifying research paths that are not necessarily dependent on the continued cooperation of an industrial partner;

- Identifying alternate techniques that may provide useful data in the event that the preferred approach does not work;
- Developing strategies to ensure security of data.

As an element of the Project Brief, you are required to identify and describe the risks affecting their proposed project, and to describe strategies for eliminating or mitigating these risks. For each risk, you must provide:

- A brief description of the risk;
- The likelihood of the risk eventuating;
- The consequences of the risk;
- The management strategies to be adopted to mitigate the consequences of the risk.

In classifying the likelihood and consequences of the risk, the guide (Based on HB 436:2004 Risk Management Guidelines – companion to Australian Standard AS/NZ 4360:2004) listed in table 1 below should be followed.

Likelihood	Description
Probable	The event is expected to occur within the time frame of the project
Possible	The event is not expected to occur in the time frame of the project
Improbable	Conceivable but highly unlikely to occur during the project
Consequence	Description
Severe	Most objectives cannot be achieved
Major	Some important objectives cannot be achieved
Moderate	Some objectives affected
Minor	Minor effects that are easily remedied
Negligible	Negligible impact on objectives

**Table 1** Guidelines for classifying the likelihood and consequences of risk factors. (Based on HB 436:2004 Risk Management Guidelines – companion to Australian Standard AS/NZ 4360:2004)

### 3.5 Personnel and Communications

To ensure the smooth progress of the project, it is important to list in the Project Brief the names, positions and contact information of all personnel at the Client organisation who will be involved in supporting the project, along with the staff involved at UWA. This should be done in table form, as illustrated below.

The next step is to set out the planned schedule for meetings and reporting. You should list the frequency (e.g. fortnightly, monthly, and quarterly) and location of any planned project meetings. If there are any requirements for periodic reporting (above and beyond the monthly reports that you are required to provide), this should be specified in this section.

Finally, you must list any specific reporting requirements for your project. Your client may require that approval be given for you to undertake certain portions of the project. For example, you may need to contact client staff, customers or stakeholders, and the client may wish to pre-approve the contact list and approve the form of the contact (such as the form of any questionnaires or surveys). The client may also need to be involved in approving the design of any experimental equipment or procedures. The Project Brief must list any such requirements, along with the communication protocols to be followed in each instance.

Name	Position	Phone	Email
Joe Bloggs	Operations Manager (Client Mentor)	(08) 9555 3555	Joe.bloggs@company.com.au
John Doe	Operator (Deputy Client Mentor)	(08) 9555 3555	jdoe@company.com.au
Dr. Jane Doe	Academic Supervisor	(08) 6488 5555	Jane.doe@uwa.edu.au
Amanda Bolt	CEED Admin Office	(08) 6488 3130	ceed@uwa.edu.au
Jeremy Leggoe	CEED Director	(08) 6488 7315	Jeremy.Leggoe@uwa.edu.au

**Table 2** Key Project Personnel

### 3.6 Confidentiality

In many projects, the client's business interests will require that some or all of the information produced during the course of the project will need to be held confidential. It is also common for clients to require students to hold information provided by the client during the course of the project in confidence. In some CEED projects, specific contracts include clauses dictating confidentiality requirements; the standard CEED Project Agreement also includes some generic clauses related to confidentiality.

In the Project Brief you must define the specific confidentiality conditions and procedures for your project. This will require determining the manner in which you will meet your obligations to the Client while still meeting the requirements for assessment in your School. This section should accordingly include:

- The nature of any material to be held in confidence;
- The nature of the restrictions imposed on any publications and presentations;
- The procedures to be used for approving publications and presentations for release;
- The period over which material must be held confidential (note – some typical conditions are included in the CEED Standard Project Agreement; additional conditions may be imposed if there is a specific contract for your project).

Note that in addition to the CEED Seminar, your project unit will usually require some form of public presentation – it is your responsibility to ensure that you are able to comply with the requirements of both the Client and your unit. In determining the confidentiality conditions for your project, you should inform the Client of the assessment procedures in your School; they should be aware of the materials you will be expected to submit for assessment, and the range of people that will be involved in the handling of these materials. This will help the client to plan any approval procedures.

Your unit coordinator will be able to assist if you need to arrange a confidential presentation - but you must give them enough lead time, and you must make them aware that a research agreement exists between the University and the Client (in the form of the CEED contract and the Project Brief) that sets out the University's obligations for handling confidential material.

The confidentiality section is one of the most common areas where changes are needed to the first draft – despite its critical importance, the publication approval process is often omitted. Make sure you don't make this error!

#### **Section 4 - Deliverables**

List the Deliverables, specifying the format they are to be delivered in. Each deliverable must be specific, and well defined – there should be no room for confusion as to what will be delivered.

The Deliverables should be arranged as a bulleted list, as follows (with examples);

- Project Report – This may simply be your thesis. If so, it should be specified as such; if not, the way in which the report provided to the client differs from a conventional thesis should be described.
- Matlab Program for performing Model Calculations.
- Manual for the Matlab Program – a text document containing comprehensive instructions for Client staff using the program.
- etc, as necessary.....

#### **Section 5 - References**

References should be listed on a separate page. The APA citation style must be used

### **Project Brief Preparation and Sign Off**

Your Project Brief must be signed by your Client Mentor, Academic Supervisor, the CEED Office, and you. As such, all parties must be involved at all stages of the process of finalising the brief. When you have completed the first draft, it should be sent to your Client Mentor, Academic Supervisor, and the CEED Office (where it will be reviewed by the Director or approved delegate).

You should expect all parties to provide feedback on the document, and be prepared to act on the feedback. It is imperative that you be responsive to the comments of all parties; in cases where conflicting feedback is received, it may be necessary to convene a meeting of the parties to achieve consensus on the point in question. You should expect a brief to go through one to two revisions before acceptance – further iterations are usually only necessary when Scholars repeatedly fail to respond to required changes, and we do not expect that from CEED Scholars.

Do not circulate a final copy for signature until you have agreement from all parties that the document is acceptable. This will only lead to embarrassment if a party that has been out of contact requires changes to a document that has already been signed by others.

The brief becomes final when ALL signatures have been placed on the same original document, either by electronic or physical signatures and delivered to the CEED Office. The CEED Office will circulate the final executed Project Brief to all parties via email.

**Please do not staple or bind your final Project Brief, only use a bull dog clip.**

**The first draft of the Project Brief should be submitted 8-10 weeks after the start of the project, with the objective of revision and signature being completed within 10-12 weeks of starting the project.** Its importance is reflected in the fact that the first studentship payment is tied to submission of the brief!

## 6. Getting Started

- **Effective use of the early weeks in your project is essential for a productive time on site.**
- **A good quality Project Brief is essential.**
- **Make all meetings productive.**
- **Use prepared lists of questions to ensure important matters are not forgotten.**
- **Always remain aware of your next deadline.**

The first few weeks is a crucial period for your project. How well you use them will determine how quickly you get on the path to a successful project. We have already discussed the importance of your initial literature review. You will need one or two early meetings of the full project team (your Academic Supervisor(s) and Client Mentors) to “kick-off” the project and define the direction of your project.

You may find that at this early stage the project is not fully defined, even by your Client Mentor – the issue will usually have been defined, but some early work may be needed to fully determine the direction of the project. To clarify this, you need to:

- define the existing situation;
- define the final outcomes desired by the CEED Client;
- define the problem to be handled and its boundaries.

This might be achieved relatively quickly, or it may take some time and effort. Either way, defining your project properly is vital. Keep a record of all ideas considered; they may become significant later. Factors “eliminated” can still play a role in defining the project problem, even though they may not appear directly. It is a good idea to note them as they are discussed, so you can re-visit them later if you need to retrace your steps.

### Early meetings with the CEED Client

Meetings with your Client Mentor during the first project weeks are important to:

- start developing a good working relationship with your Client Mentor;
- gain an understanding of your project and its constraints;
- determine and document *primary* outcomes for your project and outcomes that are desirable if you have sufficient time;
- draft a preliminary timetable (*don't* agree to commercial deadlines, but do be aware of operational constraints that may affect timelines, such as the accessibility of sites or resources);
- ascertain which UWA resources may be relevant and available;
- discuss any special equipment or expenditure required, and agree how these will be provided (noting that while the CEED Client pays for expenses, **they must approve expenditures in advance and in writing**);
- confirm procedures for obtaining approval on any expenditure;
- identify other CEED Client personnel with expertise useful for your project;

- agree on communication channels and meeting frequency (at least monthly for the full team – individual meetings with your Academic Supervisor and client Mentor should be more frequent);
- exchange the names of “deputy” Mentors and Academic Supervisors;
- familiarise yourself with the project’s working environment;
- discuss special requirements for the site work period, (eg. locations, timing, medicals, safety training, special clothing, etc.);
- confirm dates and duration for project work on site;
- find out which Human Resources Department people need to be contacted (for example, to grant access to sites or offices, or access to organizational computer systems).

## Check list for initial meeting with Mentor

You can add extra questions as appropriate, but use the following check list to help you build the list of questions you will use to obtain the necessary information from your Client Mentor at your initial meeting:

- what are the CEED Client's desired outcomes in initiating your project?
- what does your Client Mentor see as the *primary* and *secondary* outcomes of your project? These may be adjusted as the project progresses. Ensure your Client Mentor understands the project needs adequate hurdles for you to demonstrate your academic prowess (deliberately inserted additions if necessary).
- in what form does the CEED Client want to receive the project Deliverables (eg. just a report, software, working item, etc.).
- what would be a suitable preliminary timetable for the project?;
- what constraints does the CEED Client need to impose on your approach (eg. to fit other activities, methodologies, products, standards, or policies)?
- what sort of resources do the Client Mentor and Academic Supervisor believe will be needed? Do the CEED Client and/or already have access to all of them? Who will be responsible for providing them?
- how will your project be handled if any special resources prove to be unavailable when needed?
- will any equipment or other items need to be ordered specially for your project? If so, do you need to provide information? By when? Who will order them?
- will special test rigs be needed? Where will they be built?
- is there any information the CEED Client needs urgently from you for budgeting purposes?
- what are the procedures when obtaining approval on any expenditure (**the Project Agreement requires all expenditure to be approved in writing in advance**).
- which CEED Client personnel will have an interest in the project outcome, or have expertise relevant to your project?
- what frequency of written reports suits the Client Mentor (bear in mind that you will already be producing monthly reports). Is email acceptable?
- what days and times are good (or bad) for contacting your Client Mentor by phone?
- who will act as a “deputy” contact if your Client Mentor becomes unavailable for any length of time?
- when can you go to site to familiarise yourself with the project’s working environment?
- is there anything special to note about the site work (e.g. location(s), timing, medicals, safety training, special clothing)?
- when would be the most suitable time for the period(s) of site work?
- will any Human Resources Department people be involved? How and when should you make contact?
- raise any other matters you believe to be relevant to your project.

## Project preparation

While we all hope your CEED project start-up will go smoothly and according to plan, sometimes there are unavoidable delays. Aim to achieve as much as possible of the following before you start site work. In some cases that will not be possible, in which case, simply achieve what you can and aim to get the rest done in the early part of the first site work period.

The extent to which you are able to make progress on the actual solution of the problem before starting site work will vary depending on your start date. Regardless of the start date, helpful goals would be to:

1. know exactly what you are setting out to achieve, and why;
2. have planned how you will set about tackling the work;
3. have requested the resources needed at the CEED Client's site and the university;
4. have started accumulating relevant reference material;
5. have set up the structure for your planning and documentation system;
6. have begun to build up key skills and knowledge;
7. be ready to outline your approach in a brief presentation.

It is very beneficial for you to be ready for targeted work by the time you commence work on site.

## 7. Work Scheduling

- **Proper use of your time requires careful planning**
- **Use of time management techniques can save stress and time**

### Time management

During the semester, your CEED project will be conducted in parallel with other academic activities. To manage this successfully, you need to establish your workload and time demands, and allocate your time carefully. Taking on a full academic load is, realistically, a 6 day a week job – which means that during the semester you should be allocating 1.5 days a week to your CEED project. To maintain steady progress, it is essential that you make that commitment to the project every week – don't let deadlines in other units pile up and keep you from working on your CEED project.

It is essential that you established a schedule for your CEED project, and various methods are available to assist you with this. A simple and useful technique is the Gantt chart, which summarises the resource needs for the various parts of your project.

A simple series of steps can set up a Gantt chart:

1. List the activities in rough chronological order;
2. Establish which activities can be done concurrently, and which depend upon prior completion of others;
3. Estimate how long each activity is likely to take. Consult your Academic Supervisor(s) and Client Mentor as necessary on this because experience is needed. Always err on the generous side (and then leave an extra margin for delays)! You are otherwise likely to underestimate the time taken.
4. Draw axes, with the horizontal axis divided into convenient time periods, e.g. Weeks;
5. Starting with the chronologically first activity at the top of the vertical axis, draw a rectangle (or line) representing the estimated time required to complete the activity;
6. Add the remaining activities, placing them so that they are not scheduled to commence before completion of any "prerequisite" activity. Where possible, schedule the later activities to allow some "reserve" time in case the prerequisite activity is completed late. You may choose to start scheduling the later activities e.g. writing up your thesis and CEED report) from the project completion deadline because that is inflexible. In that case, you would effectively be working from the ends towards the middle;
7. Extend each rectangle forwards with a dotted line (or similar) as far as the next activity for which it is a prerequisite. This indicates the measure of flexibility on this activity (see Items 1 & 2 in figure below). Items without flexibility are effectively "critical". Delay in completing these will delay the whole project.
8. Activities requiring particular resources can be shaded differently, or shown separately if required, to identify easily when they occur.
9. To assess the demands on a given resource (eg. your time) during any period, you can make a histogram at the bottom of the Gantt chart, totaling the number of rectangles in parallel during that period (see diagram below). Having put the project resource demands onto the Gantt chart,

it is wise to include your other academic load so you can allow time to complete major assignments and revise for examinations.

10. Pay particular attention to identifying items on the critical path – those items that are pre-requisites for subsequent activities. These items must be scheduled with great care, as a delay in such an item will delay subsequent items and potentially the entire project.

It is important to assess the “balance” of your Gantt chart – **the majority of the items in the chart should be research activities, rather than submission/assessment activities.** If less than 75% of the activities in the chart are research activities, then you haven’t given enough thought to how you are going to accomplish the research!

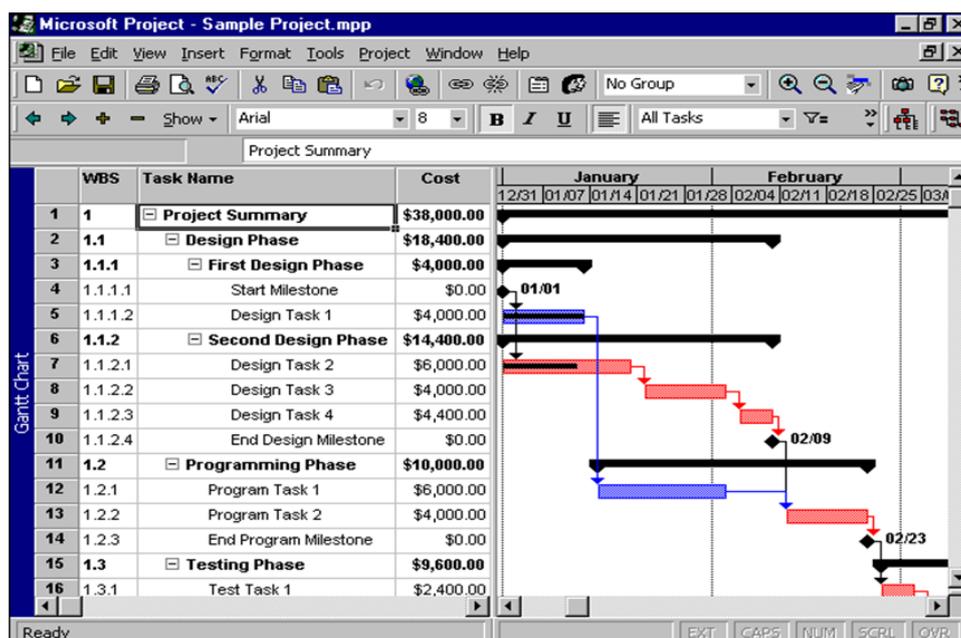
If at the end of this scheduling process, you find insufficient time to complete all the items you expected, or too much occurring at one time, you will need to reassess the workload and project expectations with your Academic Supervisor.

## Keep your Gantt chart up to date

Your Gantt chart should be updated as the project progresses, so that you know the current status of the project, and you know the demands on your time and other resources for the remainder of the project (and can make plans/adjustments accordingly). Make a practice of taking your chart to all meetings with your Academic Supervisor(s) and Client Mentor as it can be a great help when assessing possible courses of action.

## Preparing your Gantt chart

Microsoft *Project* is a good software package that provides flexibility in the development of the Gantt chart. It is available in the school computers in Engineering, and should be accessible via UniDesk for all disciplines. As an alternative, you can construct and revise your Gantt Chart manually, using software such as Microsoft Excel.



## 8. Communication

- **Effective communication is an essential professional skill.**
- **Document meetings, agreements, and critical information. In the long term, memories are unreliable.**
- **Keep everyone informed at all times.**
- **Regular communication will build people's confidence in you.**

### Importance of Communication

The success of your project hinges on people and your ability to ensure that proper input is obtained from all parties. You are effectively the coordinator of your project (even though you are under supervision) so the final responsibility rests with *you*.

Communication is the key to full participation and input into your project. Without proper communication, the best plans and ideas in the world will go nowhere. It is vital that you recognise this and take active steps to ensure proper communication takes place.

Communication may take many forms, depending on the nature of the message to be conveyed. From formal, such as writing a letter, through to email, face-to-face, phone call, as appropriate for the given situation and/or material.

Your CEED project involves four parties, yourself, your Academic Supervisor, your Client Mentor, and the CEED Office. It is important that all be kept adequately informed.

**Miscommunication is one of the greatest causes of problems in projects**

### More effective communication

There are steps you can take to minimise the risk of miscommunication (and/or misunderstanding):

#### 1. Keep in regular contact with all parties.

This does not mean that *all* parties need to attend *every* meeting. At times, some people can just be kept up to date with progress and decisions. At other times they may need to be closely involved. You must decide what level is appropriate, and when. Do not neglect this and just hope for the best. Make conscious decisions in consultation with your Academic Supervisor(s) and Client Mentor. If in doubt, ask the person how closely they want to be involved.

#### 2. Put all agreements in writing.

When an agreement is made, the parties are in accord (or think they are) and you may be tempted to treat the verbal agreement as sufficient. Do not fall into this trap!

Firstly, putting decisions in writing makes all parties check much more carefully that they understand what is agreed. Many misunderstandings are avoided as a result.

Secondly, memories fade with time and become confused. Perceptions, pressures and priorities change. Even with goodwill on all sides, disagreements can arise. Deliberately or unconsciously, people's recollections adjust to accommodate their current perceptions. A written document (even just a scribbled note) allows the facts to be established later. If goodwill has been stretched a bit thin, written documents become even more important.

### **3. Keep all parties informed**

If in doubt whether or not a person needs some information, err on the safe side by sending it. The risk in sending too much information is that the recipients may not read it. Help them by indicating what you require of them. For example, state whether it is "for information only", or "requires action".

### **Monthly written progress reports**

Communication in the corporate and public sectors is vital, and each organisation will have its own mechanisms. Regular reports are an important part of this. You may be viewed as unsuccessful if you do not meet expectations in reporting. As part of your project obligations, you are required to present a brief report every month (throughout all phases of the project, **including** the site work period) to your Academic Supervisor, Client Mentor and the CEED Office. These reports are usually very brief, simply outlining progress, problems, delays, and expectations for the next month (we don't need or want you to provide a full report detailing your results and findings each month). The template for the monthly report is available from the CEED website (<http://ceed.wa.edu.au/project-materials-for-scholars/>). Monthly Reports are due the first day of the following month.

The CEED Client may want you to write a longer report or provide a presentation at the end of your site work period. Check with your Client Mentor about this – it is an opportunity to build your network and reputation at the Client. If you submit such a report/presentation, provide your Academic Supervisor(s) with a copy for information, preferably in time to allow feed-back before submission.

### **Communication with the CEED Office**

The CEED Office is responsible for arranging your project, and monitors progress to ensure all needs are being met. The CEED Office will also be initiating some activities exclusively for CEED students, so communication channels need to be kept open.

From time to time, group meetings of all CEED students will be held. Communications will generally be by email. Please check your email regularly, and ensure that the CEED Office always has your current contact information. You may receive a phone call for urgent matters – make sure you respond promptly!

### **In case of problems**

Should communication or any other sort of issues arise during your project (including vacations), discuss them immediately with your Academic Supervisor(s) or the CEED Office. Make sure to document these issues in your Monthly Progress Reports, and raise them directly with the CEED office if urgent attention is required.

## 9. Work Your Network

- **You cannot succeed alone, you need to work with others.**
- **You already have a network of people keen to help you succeed.**
- **Networks are about mutual success, always be ready to help others.**
- **Making better use of your network is good for you and for others.**
- **Don't be too proud to let your network know how they can help you.**

### Build your Network

The project you are undertaking is yours, but you cannot accomplish it alone. Your achievements to date have been assisted by a mutually supportive network of family, friends, business associates, teachers (e.g. lecturers), and other contacts. Overall, you contribute to others just as much as you receive (or more), but contributions will not be balanced for each person. This is normal, so don't be afraid to ask other people for help.

Your network is important to you, so learn how to use it. There are a number of sources discussing networking – one is "Successful Networking" by Donna Fisher and Sandy Vilas (1996). Networking works both ways. In fact, your focus is best placed on seeking to help others. Networking has been described as: "Creating relationships whereby you can help others achieve their goals, which in turn will help you achieve yours." (Ralph Hayes, President, Data Voice Technologies, cited by "Successful Networking", p28)

As you work on your project, you will need to *extend* and to *make use of* your supportive network. You have probably been doing this unconsciously in the past, but you will be much more effective if you do it deliberately.

### Extending your network

You are continually meeting new people. They are potentially new members of your network, as you are of theirs. Use the opportunity to discover where they could fit in. Avoid at all times the attitude of looking only to receive. You may be able to help them. "Networking is the genuine expression of interest in others and the willingness to contribute and support them when possible." ("Successful Networking", p20). Be ready to let people know where you might be of help to them, either through your own knowledge or by putting them in contact with people you know.

When you meet new people at work, or even socially, be prepared to write down their names and how you can contact them again. Equally, be willing to supply information for them to contact you. This need not infringe your privacy or theirs. If you or they have concerns, simply ask for (or give) a means of contacting at work (you could give your university school's address). Most people are happy to exchange this information.

## Making better use of your network

How can you make better use of your network? Most people are glad to help others if they can. It gives them satisfaction. "When people ask us for support we typically feel pleased, acknowledged, and honoured that they thought of us and thought enough of us to feel that we could be of assistance. Isn't that true for you, too? By polling the people in our workshops, we have found that this is consistently true. Yet isn't it interesting that so few people ask for what they want or need?" ("Successful Networking", pp18)

The key to benefiting from your network is letting people know you are seeking help on a particular matter. This approach removes fear of rejection: "Networking consists of gathering, collecting, and distributing information. When you contact someone to let them know that you are looking for a referral, prospect, or service provider, you are giving that person information. Your focus is to distribute this information to a sufficient number of people to make the connections that will best serve you in reaching your goal and getting the support or contact that you want. Rejection is an issue only if your focus is on having someone respond in a particular way. If you are relaying information primarily as a way to mutually share resources, then any response you get will support the flow of the process." ("Successful Networking" pp16-17)

Some CEED scholars have been reluctant to ask questions for fear of appearing ignorant (in fact this can be true of students in general), especially once their project has been under way for a while. Don't be afraid to let your questions be known. "It is important to realize that asking for support is not a sign of weakness but really an indication of:

- Strong self-esteem.
- A commitment to the goal rather than the ego.
- A willingness and ability to learn from others." ("Successful Networking" p18)

Develop your personal network. You will discover that: "In those relationships you will find the people who want to support you." ("Successful Networking", p20).

# 10. Workload

- **Work will be divided between campus and site depending upon project needs. Flexibility is important.**
- **The workload can seem to differ from non-CEED projects, and there are additional requirements – but by working wisely, your CEED commitments can enhance your unit commitments**

## Work Location

For full projects, your work will usually be distributed between the CEED Client site and the university. For the 8 weeks spent on the project during the summer vacation, you will need to discuss with your Academic Supervisor(s) and Client Mentor where to spend the majority of your time on site, and how best to schedule that time.

During semester time, while you are nominally expected to spend most of your time on campus, many clients will extend your access to site during the semester so that you can access resources needed for your research. Many CEED scholars continue to work on site 1 day per week during the semester – while this is not mandatory, if the opportunity is available it is encouraged, as it gives you a chance to focus on the project without the distractions of campus, and helps you maintain your connection to the Client and your Client network.

## Workload Expectations for Final-Year/Honours CEED research projects

During the summer vacation, you are expected to work on site full time for 8 weeks. Your working day/week should be consistent with the usual expectations for staff at the client – that would typically be 37.5 hours per week. If your client works a 9 day fortnight or other variation to the standard 5 day work week, then you should too.

During the semester, your commitment to the project should match the number of credit points allocated to the research unit you are undertaking. Being a full time student is really a 5-6 day a week job (realistically, a 40-50 hour per week job) for successful students.

That being the case, for a 6 point research unit we would expect CEED scholars to allocate 1.25 to 1.5 days a week to their CEED project (10-12 hours); naturally, the amount doubles for a 12 point research unit.

It is important that you balance your workload across all your units during the semester. It can be easy to fall into the trap of focusing on whichever unit has the nearest deadline, ignoring other units. That can be especially harmful to research projects, as you can lose momentum – the most successful projects tick along steadily, rather than being undertaken in pressurized bursts as deadlines approach.

**So – make sure you adhere to allocating the required time to your project every week.** This will require you to take a similar approach to your other units – in particular starting on assignments when

they are assigned, rather than at the last minute, so that you can maintain a balanced workload. This should actually improve your performance in all units!

This can be a particular challenge when you have units that include group projects, where you have to fit in with others. If the deadline for a group project is at the end of a week (say Friday), then allocate time to your CEED project at the start of the week (Monday/Tuesday), when you will have more control of your time and don't have to coordinate with others.

One of the advantages of a "full" CEED project is that you spend more time working on the project – this gives you time to develop a deeper understanding of your project, and deliver more substantial results.

CEED projects do impose additional requirements – in addition to meeting **all** of the submissions required by your research project unit, you are also expected to prepare a project brief, submit monthly reports, and prepare a paper and present at the CEED seminar.

Used astutely, however, the CEED requirements should assist and enhance your unit submissions. As the CEED program cannot control the assessment of your project units, it is not usually possible, for example, to submit your project brief as your unit project proposal (required in Engineering final year projects). The requirements and importantly assessment rubrics are different. However, if the project brief is prepared before the project proposal is due (as should normally be done if the brief is prepared on schedule), then it should be possible to use a significant amount of the material from the brief in your project proposal. As your project proposal is reviewed and refined in consultation with your Academic Supervisor(s), Client Mentors and the CEED Office, this should help ensure that you have high quality material to include in your proposal!

Similarly, once you've prepared and delivered a CEED seminar presentation, you are well prepared for the school seminar presentation that will be assessed for your unit. The CEED seminar paper is also helpful – for most students, it is prepared at a time when you should be starting to prepare your final report/thesis, and can help you formulate your ideas and start to frame that report.

While there is no equivalent for the Monthly Reports in research project units, the act of preparing them is important in helping you to keep on track and maintaining momentum in your project. It is in fact one of the factors that sees CEED students make much better progress than the average student, who can often drift in the absence of regular reporting.

# 11. Talks and Seminars

- **You will present your work at the CEED seminar, at your school and at the CEED client.**
- **CEED scholars participate in the organisation of the CEED seminar.**
- **Each CEED scholar prepares a paper for publication in the CEED seminar proceedings**

## Presentations

You will normally need to give at least three presentations on your work over the project period. All CEED scholars present at the CEED seminar, typically held in mid-September. Most research project units require students to give a seminar in their school (often for assessment). CEED scholars can also usually expect to present at their Client – certainly at the end of the project, and often an interim or progress presentation is given at the Client premises earlier in the project.

All presentations provide you with an opportunity to develop your communication skills (an area of great importance for both your career and personal life) and enhance your network.

## CEED Seminar

The CEED Seminar is held in mid-September, with guests from existing and potential CEED Clients, the University, and the community of CEED Alumni invited to hear CEED scholars give a short (15 minute) presentation on their work. Midway start CEED Scholars will give a 5 minute short presentation of a synapses of the project ahead. This is followed by a networking function. Proceedings, incorporating papers by all CEED students, are produced and issued to all delegates. Attendance is by invitation only, and there is no charge.

The Seminar have several aims. It provides an opportunity for:

- you and the other CEED scholars to show your work to potential employers;
- you to meet and mingle with senior people from industry and government bodies;
- us all to show what can be achieved through CEED projects;
- encouraging CEED Clients to offer further CEED projects;
- raising the profile of the university and its graduates in the wider community.

All CEED scholars who complete their CEED project that year take a part in the organization of the seminar, in conjunction with the CEED Office. The event is a co-operative effort, but largely organised by CEED scholars. The Seminar has proven to be a very beneficial and enjoyable event over many years.

Activities are coordinated by committees, with students forming a majority on each, an Editorial Committee (3-4 scholars and 1 staff); AV Committee (3 scholars and 1 staff) and an Event Committee (the remaining scholar and 1 staff). These committees are responsible to the CEED Director for all organisation. They receive assistance from the CEED Office, and all costs are met by CEED. The main activities are outlined below:

1. **All CEED scholars** attend a meeting early in second semester to select committee members and discuss dates and deadlines for the seminar;
2. **All scholars** finishing that year prepare a short paper (maximum 6 pages) on their project a specified date, and submit them in the set format to the CEED Office for compilation into Proceedings. All papers must be approved by the CEED client for public release;
3. The **Editorial Committee** provides feedback and groups papers for presentation at the seminar;
4. The **Events Committee** arranges the setting up, registration, ushering, etc. for the seminar assisted by *all* CEED scholars and the CEED Office, to maximize interaction between scholars and external delegates;
5. **All scholars** attend a CEED seminar rehearsal, held the week before the actual seminar, where students presenting papers get feedback from the group, and final arrangements are made for seminar duties;
6. Invitations to Client Mentors, senior personnel from current and potential CEED Clients, Academic Supervisors, and senior university people, will be sent out by the CEED Office. The formal "host" is usually a very senior person within the university, such as the Vice-Chancellor;
7. Editorial committee members chair the seminar sessions, act as **Master of Ceremonies** for the welcome and networking session, and give a **speech of thanks** at the networking function.

## CEED Seminar Papers

All papers are published in the seminar proceedings and distributed to all delegates at registration. When preparing your paper, you need to consider the following points:

1. A high standard of presentation and content is expected of the high caliber students undertaking CEED projects;
2. Written seminar papers should aim to inform intelligent people who already have some knowledge of your topic, and should typically be modeled on conference papers for your particular discipline. Expect your paper to be widely distributed to your CEED Client's personnel. High quality diagrams enhance your presentation, but be aware of the space they take;
3. A standard format is used for all papers. You will be able to download a template file with the necessary formats from the CEED web site. You are required to use this template for your paper;
4. Your paper should be 6 pages long. 6 pages is a hard limit – longer papers will be rejected;
5. Get your Academic Supervisor(s) to review your paper before submitting it to your Client Mentor. Your Client Mentor must check your paper, and put it through the Client's approval process (in case it contains commercially sensitive material) before you submit it to the CEED Office. It is mandatory for the Client to approve the paper and presentation for public release – if either is not approved, it cannot be published/presented;
6. Submit an electronic copy of your paper (with signed Authority to Publish approval from your Client Mentor), in the required template in Microsoft Word.
7. Difficulty is occasionally experienced with diagrams in the electronic copy. If you have diagrams created by exotic software, check in advance that they can be transferred successfully.

## Seminar presentations

Details of talk duration, question time, etc. will be finalized as the seminar approaches. However, the following may be helpful to you as a guide:

1. Talks are likely to be about 15 minutes duration, with 5 minutes afterwards for questions (which may also involve your Client Mentor);

2. The purpose of your talk is to inform others generally about your project work, and to demonstrate to them how it is valuable (this is an essential part of "real life" practice);
3. Your talk should be aimed at intelligent people with no knowledge of your discipline or topic. This means you need to spend some time on the background to your project, and adjust the technical depth of your talk to make it accessible to your audience. This is a requirement for any presentation – they must always be tailored for your expected audience;
4. Make your talk an interesting and enjoyable experience for your audience. If you do this, it will have much greater impact - and convey more information - than one which is only significant technically;
5. Your appearance and attitude inevitably influence delegates' perception of both you and the university. It is a good investment to make sure they receive a good impression - make sure you are smartly and professionally dressed. Treat the occasion as you would a rather important interview - it is!

Remember the following key points;

### Delivery

- Loudness – There's no need to shout, but you must speak clearly and loudly enough for the entire room to hear you.
- Speaking rate – Nerves will often make inexperienced speakers talk too quickly. Similarly, a lack of confidence or preparation may slow a speaker down as they continually check their notes or slides. Practice your talk to establish a comfortable, confident speaking rate.
- Mannerisms/Interjections – Most people have mannerisms that they are unaware of. Ask your friends to watch you practice your talk, and they will be able to see any that you might have. Avoid repeatedly saying things like "um", "er", "you know" or "like".
- Eye contact – It is critical to engage your audience - avoid turning your back on the audience to read your presentation of your slides, and don't just stare at your notes. Make sure you speak to your audience, not away from them.
- Gestures – Be animated – don't just stand still with your hands in your pocket. Point out interesting features on your slides.
- Redundancy – don't repeat the same thing over and over. It's OK to reinforce important points, but don't overdo it.
- Confidence – The key to confidence is preparation. If you take care in preparing your slides, prepare your speaking notes well, and practice your talk, you will be confident when the time comes.
- Professionalism – Don't be overly familiar with the audience, and use professional language. Avoid slang, and, as a general rule, never swear. Remember to go by the standards of your audience, not your peers; they will tend to be older and more conservative.
- Dress – Dress as if for an interview.
- Time limits – It is extremely inconsiderate to exceed time limits. Your audience are busy people, and, if there are parallel seminar sessions, may wish switch sessions between talks.

## Slide Preparation

- Font and image sizes – Always remember that the back of the room is a long way away, and size text and images accordingly. Test your presentation if you have any doubts.
- Colors and backgrounds – Many color combinations that look pretty on your screen don't project well. In general, avoid complicated backgrounds, and test your slides to ensure that everything is clearly visible from the back of the room (examples – always have dark text on a light background, or light on dark; make lines thicker, as thin lines don't project well; red lines or text on a white background looks good on screen but projects poorly). Remember; it may be dull, but plain white backgrounds and black text generally work well.
- Spelling/Grammar – Spelling and grammatical mistakes make you look lazy and careless, and can detract from people's impression of the quality of your work. If people think you can't spell, or worse, too lazy to check, they're not likely to think of you as rigorous in your work, and, by extension, will doubt your work.
- Graphs and Images – Must always be labeled. Never leave the audience in any doubt as to what they are seeing – try to make each slide self-explanatory. In many instances, presentations will be circulated around a company, without you being there to explain it. The axes on a graph must be labeled with titles and units – otherwise the graph is meaningless.
- Language – In addition to being professional, language must be appropriate for the audience. Avoid esoteric argon, while still respecting the intelligence of the audience.
- Shared knowledge – Tailor any presentation to the audience, being mindful of the expertise of the audience in your subject area.
- Key terms – If it's important, it should be on the slide. Again, remember that a presentation may be circulated via email to people who didn't get to hear your talk.
- Stressing Points – If it's really important, it'll be on the slide AND you will talk about it. After all, that's the point of doing the presentation.
- Distractions – This can be a matter of personal taste, but when using the "effects" in PowerPoint be mindful that they not slow down your talk or provide unnecessary distractions. It may look cool, but your audience will eventually get fed up with waiting for the next bit of text to fly in from the side, especially if it slows the talk down.
- Technical content – the points in the rubric relate to a specific class, but you should always remember one golden rule – MAKE SURE EVERYTHING YOU PUT ON THE SLIDE IS TECHNICALLY ACCURATE (at least to the best of your knowledge). A presentation is a time to demonstrate your expertise, not to show people that you are sloppy or uninformed.

## 12. Project Agreement

- **CEED projects involve formal agreements.**
- **You sign a formal undertaking for your CEED project.**
- **UWA has a formal agreement with the CEED Client.**
- **Confidentiality agreements may also be required.**

### CEED student agreement

When you accept your CEED project, you enter part of an agreement between the university, the CEED Client and yourself to perform a specific piece of work. You are not engaged as a consultant with particular expertise, but as a student with the project, as a co-operative research venture, incorporated in your regular program of study.

For the project, you are not employed by the university, nor by the CEED Client, even though both are committing time and resources to your project.

You will have signed a formal application and acceptance for your CEED project. You will also have signed a "CEED Student Undertaking", which becomes part of the formal agreement between UWA and the CEED Client. Some CEED Clients may also require students to enter into another agreement before starting work. If so, it is likely to be their standard document – but may, in some way, duplicate or contradict your Project Acceptance or Student Undertaking. Do not sign any such document without first bringing it to your Academic Supervisor(s) and the CEED Office. The CEED office will have to work with the UWA legal team to confirm that it is acceptable for you to sign the agreement – you can only sign such an agreement once it has been cleared by the University and the CEED office.

### Confidentiality

Some CEED Clients may be concerned about confidentiality relating to the project. The CEED Student Undertaking includes standard provisions for confidentiality, so you will already have confirmed that you will comply with confidentiality requirements.

Some CEED Clients may require all parties involved in a project (including you) to sign their own standard confidentiality agreement. This is common in industry, particularly where competition for new information is a major factor. Once again, do not sign any such document without first bringing it to your Academic Supervisor(s) and the CEED Office. The CEED office will have to work with the UWA legal team to confirm that the agreement is acceptable – in many cases, the University will need to be a signatory to the agreement, and you can only sign such an agreement once it has been cleared by the University and the CEED office.

### Intellectual Property

While ownership of Intellectual Property produced by joint research (such as CEED projects) is generally shared between the university and CEED Clients, CEED offers an option whereby Clients may pay a fee surcharge to obtain full ownership of IP produced during the project. In such cases, the normal CEED payments to students are increased to compensate for the concession. Ownership of "Background IP" is unaffected by the surcharge. If you have any concerns about IP, contact the CEED Office immediately.

## 13. Project Expenses

- **CEED Clients fund CEED projects, and you will need to accommodate their accounting procedures.**
- **You are responsible for ensuring CEED Client accounting needs are met.**
- **Prior written approval by the CEED client is required before any project expenditure can be made.**
- **You can claim for a refund on minor expenses related to the preparation of deliverables.**

### Agreement on funding

The CEED Client has agreed to share with the university the cost of your project and, in addition to providing your Studentship, will fund the expenses of your project. **The CEED Client's undertaking to fund project expenses is conditional on their approval being obtained in writing *before* incurring any expenditure.**

### Responsibility

You are required to take responsibility for the financial management of your project, under the oversight (and guidance) of your Academic Supervisor(s) and Client Mentor. Whenever possible, consult your Academic Supervisor(s) before proposing any new expenditure to your Client Mentor. Always keep both persons informed of progress.

Processing of paperwork for expenditure on your project is your responsibility. This includes obtaining written approval from the CEED Client prior to any expenditure, and keeping proper records of expenditure for accounting purposes. You can reduce the administrative work if you choose carefully how you get certain things done; this is discussed further below.

### Minor Deliverable Preparation Expenses

You have access to a limited sum of money (\$200 excl GST in the first instance) to cover specific expenses incurred during the preparation of deliverables. These are basically limited to the production of a printed copies of your thesis, or a hard drive for your work to be delivered to the client and left with them or the CEED Office

Approval for such expenditure up to the \$200 limit has already been obtained. Claims for these Minor Expenses must be approved by your lead Academic Supervisor on your Student Completion Report (which you will be given to you toward the end of your project). All reimbursements are carried out electronically via Concur. Instructions on how to access this are on LMS.

If expenses are likely to exceed this sum, you must obtain written approval from the CEED Client, Academic Supervisor and CEED Director using the correct form "Authorisation to Incur Project Expenses" before claiming greater amounts.

Details of how this sum (and any increase on it) is spent must be provided for accounting purposes. **It is essential to obtain and keep receipts.**

## Travel expenses

Under the standard project agreement, CEED Clients agree to reimburse students only for travel outside the Perth metropolitan area, provided it has been agreed to in writing. If your site work is more than a 50km radius away from UWA, ask your Client Mentor how travel expenses are handled in the CEED Client's organisation. Record this in your Project Brief.

If your Client Mentor wants your transport claims to be handled through the CEED Office, arrangements **must** be confirmed **in writing** prior to any expenses being incurred. Forward a copy of the authorisation to the CEED Office and make sure you keep accurate records and receipts of travel costs. Without prior written authorisation and accurate records, the CEED Office will not reimburse you.

Should your Client Mentor decide to reimburse you for travel *within* the metropolitan area, this will need to be confirmed in writing and included in the Project Brief.

## Project expenditure through the university

The following is a general principle when handling expenditure if the university is spending money on your project on behalf of the CEED Client:

1. **Prior written authorisation from the CEED Client is essential;**
2. Your school and Academic Supervisor arrange the expenditure and makes payments from the Academic Supervisor's accounts (project grant) as the job progresses;
3. When the job is complete, you (or with their agreement, your school) supply the CEED Office with the invoices, statements and information so they can invoice the CEED Client and arrange for your Academic Supervisor to be reimbursed.

## Specific procedures for expenditure

If your project incurs any expense, you can arrange for it to be handled in one of three ways. These are discussed below. While approach 1 requires the least administrative effort for you, approaches 2 and 3 may be preferred by the university. This is because these approaches allow the University accounting system to record the expenditure on research undertaken through the University. This information is then included in submissions used to secure funding for the University from the government.

### 1. Incur expenditure through the CEED Client

This approach requires the least work by you and your school, and may also be preferred by the CEED Client. Ask your Client Mentor (in writing) to obtain the needed goods and services through the CEED Client's organisation. They may be provided by the CEED Client or by sub-contractors, but will be arranged and supervised by the Client Mentor.

You might be asked to keep records of such expenditure, or to process applications for payment within the CEED Client's organisation. Ask your Client Mentor what is required, and what records you need to keep.

Please ensure project expenses incurred by your university are included in your Monthly Reports, and include receipts with this report.

## 2. Work by the University or others on "fixed price"

You can obtain a "fixed price" quotation from your school's personnel (or an outside contractor) for goods and services and then obtain approval from the CEED Client for this expenditure. Make sure that quotations from suppliers are in writing, and send a copy of the quotation to your Client Mentor, including any "small print" conditions on the back!

Your school (or other party) then functions as a sub-contractor to provide goods and services for that price. In this case, you need not maintain detailed records of the work for submission to the CEED Client because they have agreed to a set price. The school (or other party) will keep the records necessary for their own purposes, and you need not be involved in these.

At the end of the project (or for progress payments when large sums are involved), make sure that a request for payment is submitted to the CEED Office (by you or your school). The CEED Office will then invoice the CEED Client, and have your school reimbursed.

## 3. Work by the University on "time and materials" basis

This is a flexible, but administratively tedious way to obtain goods and services. You may obtain approval from the CEED Client for expenditure on a "time and materials" basis up to an agreed price limit. You then make arrangements with the appropriate personnel in your school to buy the necessary items and have technician time logged for charging to the project.

It *remains your responsibility* under your Academic Supervisor(s) to ensure the agreed limit is not exceeded. If it looks as though the limit may be exceeded, request a revised limit from your Client Mentor as early as possible. ***Never allow expenditure to exceed the current limit.*** It can cause difficulties in the relationship with the Client.

Make sure that all expenditure (including stock items of more than trivial cost) is recorded appropriately against your project. Your Academic Supervisor(s) has a sample sheet for this and will discuss procedures with you. A sample of the sheet is shown on the following page. Details of expenditure will need to be passed to your school accounts clerk as work proceeds.

When a project is complete, arrange for details of expenditure, together with a copy of the CEED Client's authorisation, and all receipts be sent to the CEED Office. The CEED Office will invoice the CEED Client and arrange for your Academic Supervisor to be reimbursed.

### Notes:

- You should **NOT** incur expenses on your personal credit card. All expenses should be charged to your Academic Supervisor's accounts.
- Invoices will not be sent to the CEED Client on your behalf unless you supply a copy of their written authorisation for the expenditures

## Authorisation to Incur Project Expenses

<b>Project Number</b>	
<b>Project Title</b>	
<b>Client</b>	
<b>CEED Scholar</b>	
<b>Supervisors Project Grant (this must be completed)</b>	BU:  PG:

<b>Purpose of Expenditure</b>	
<b>Estimated Expenditure</b>	
<b>Quotation/ Estimate Source</b>	
<b>Attachments</b>	<i>[All Quotes/Estimates comprising the estimated expenditure must be attached and listed here]</i>

### Authorisations

	<b>Name</b>	<b>Signature</b>	<b>Date</b>
<b>Mentor</b>			
<b>Supervisor</b>			
<b>CEED Director</b>			

## 14. Insurance and Safety

- **The university indemnifies the CEED Client against accidental damage you may cause on site**
- **Different conditions may apply for any period when you take on employment with the Client**
- **You are covered by the University's student placement insurance when you are working on site**
- **You are responsible for ensuring you comply with the CEED Client's safety procedures**

### Insurance

The university indemnifies the CEED Client against accidental damage caused by CEED students' negligence on site while working on their projects, including periods when visiting and carrying out project work on site. This also provides some cover for you for any accident against yourself, but does not cover damage caused as a result of foolish or criminal acts.

The University's student placement insurance will cover you when you are working on site with the Client.

### Insurance while employed by the CEED Client

If you make any arrangement with the CEED Client for any period of work *earning extra payment*, you effectively become an employee of the CEED Client for that period. This is an important technicality because employees fall into a different insurance category; for example, the CEED Client is obliged to provide workers' compensation insurance for any period of employment.

If the CEED Client is *not* employing you for any period, your normal CEED student conditions apply.

Make sure the *dates* of any period of employment are clearly agreed in advance, *in writing*, so that liability for insurance is absolutely unambiguous. This is your responsibility. Any disagreement between insurance companies tends to be extremely inconvenient for those caught up in it.

### Safety on site

Your safety is of paramount importance. Treat it that way. Your CEED Client may have a work safety program requiring you to attend training on safety matters. Check with your Client Mentor, who can then make any necessary arrangements. Industrial sites often contain unforeseen dangers so, if in any doubt, ask. Never be ashamed to ask.

## 15. Studentship

- **Students on funded projects receive a studentship; students on pro bono projects do not.**
- **Studentship amounts vary according to the IP arrangements for the project.**
- **CEED studentships are conditionally tax exempt**

### Arrangement for Studentship

Provided you have no other special arrangement with the CEED Client, students on funded projects receive a Studentship for the project. This Studentship is tax free, subject to the conditions listed in the section below, and the amount varies according to the IP arrangements and nature of your project – the studentship for your project is confirmed in the Student Undertaking that you have signed. Students on pro bono projects do not receive a studentship.

Payment times for HDR students vary, but for Final year/Honours level students on full projects, they are generally made through the CEED Office in three installments as follows:

1. Once you have handed in your SIGNED Project Brief to the CEED Office, and Monthly Reports are up to date, the first installment will be made;
2. Provided you are up-to-date with all reports, the second payment will be made at the start of the second semester of your Final or Honours year;
3. When the Client confirms that all Deliverables have been accepted, your thesis has been submitted to the school and the Client, and your deliverables and forms have been delivered the CEED office, project expenses and receipts have been submitted, then if you are up-to-date with all reports the third payment is made.

For students on funded  $\frac{3}{4}$  projects, the studentship will be paid in two equal installments;

1. Once you have handed in your SIGNED Project Brief to the CEED Office, and Monthly Reports are up to date, the first installment will be made;
2. When the Client confirms that all Deliverables have been accepted, your thesis has been submitted to the school and the Client, and your deliverables and forms have been delivered to the CEED office, project expenses and receipts have been submitted, then if you are up-to-date with all reports the second payment is made.

Payment of your CEED Studentship is conditional upon satisfactory performance on your project and on the understanding that you continue the project to its conclusion. Failure to fulfill your obligations could lead to loss of, or even require repayment of, your Studentship.

For UWA Scholars, Studentships are paid by Electronic Funds Transfer, as per University policy. If you have any queries regarding your Studentship, please contact the CEED Office.

For Curtin Students, your studentships will also be handled by Electronic Funds Transfer which will be handled by the Office of Research and Development, their contact email is ORD-Support-SAE@curtin.edu.au. Once you meet your milestones, the CEED Office will contact them to process your studentship.

## Students with another scholarship or cadetship

Students with a scholarship or cadetship from the CEED Client typically have in place an arrangement giving even more generous financial support than the CEED Studentship. As a general rule, whichever mechanism provides the greater support will be used, *but not both*.

It is your responsibility to ensure that both the CEED Client and CEED Office are informed if you have financial support from the CEED Client or other parties under which you have specific obligations. If you have financial support from a different organisation which still allows you to fulfill your CEED obligations, that support should not affect your eligibility for the CEED Studentship. Under such circumstances, establishing your liability for tax would be your responsibility.

## CEED Studentships and Youth Allowance/Austudy

Your CEED Studentship is classified as income for the purposes of establishing your Youth Allowance or Austudy entitlement. You will need to check your payment schedule to determine how much of your studentship falls within a particular financial or calendar year (it will vary depending on the start date for your project).

If your total "other" income (including your tax free CEED Studentship) for any year exceeds limits allowed by the Federal Government, your allowance may be reduced. Despite this, you will still be better off with the CEED Studentship. The above is for your information only, and it remains your responsibility to ensure you comply with all requirements for your allowance and taxation liabilities. The rules are regularly updates, so you should check with the appropriate web sites:

- [Youth Allowance for students and Australian Apprentices - Services Australia](#)
- [Austudy - Services Australia](#)

## Conditions of Tax-Exempt CEED Studentships

CEED Studentships are available to students who qualify to be full-time candidates for a university course. The Studentships are funded from monies paid to the CEED Office by CEED Clients and shall be governed by the following conditions:

- 1.1 In order to be considered for a Studentship, students must have satisfactorily completed a minimum of five semesters of undergraduate study and be accepted into the CEED Program by a formal offer of a CEED project.
- 1.2 Projects and Studentships will be awarded to those eligible students who apply for and are deemed to be best suited to the demands of individual CEED projects, as assessed by the respective Academic Supervisors and Client Mentors.

- 2.1 Applications for CEED projects with Studentships may be called annually, and a closing date for lodgment shall be set by the CEED Office.
- 2.2 Notwithstanding 2.1 above, the CEED Office shall have the discretion to call for applications based on special grounds at any time of the year.
- 2.3 Each individual project with a Studentship shall be advertised.
- 2.4 Applications for projects with Studentships shall be submitted by the due date and be addressed to the CEED Office.
- 3.1 The CEED Office shall from time to time review the standard studentship amounts.
- 3.2 The stipend shall be paid in equal installments at intervals determined by the CEED Office.
- 3.3 The Studentship shall not be affected by payments made to Studentship holders for expenses related directly to the CEED Project they are undertaking.
- 4.1 A student awarded a CEED project may engage in appropriate employment, whether within the University or outside, up to a maximum of 180 hours in a calendar year but shall not, without written permission from the CEED Office, engage in employment for more than 10 hours in any one week.
- 5.1 CEED Studentships are financed by CEED Clients that propose project topics and provide a Mentor to assist the Studentship holders together with nominated Academic Supervisors.
- 5.2 Former Studentship holders are neither obligated to seek full-time employment with their client company, nor is the client company obligated to offer employment to a former CEED Studentship holder.

## 16. Arrangements for Site Work

- **You need to make arrangements for the timing of your site work.**
- **Make good use of the site period to develop your network within the Client.**

### Opportunity with site work

For students undertaking full projects, the CEED Client has undertaken to enable you to work on your project either at their premises or on campus (depending on the needs of the project) for a period of time during the course of your project. At Final year/Honours level, this is eight weeks, typically during the summer vacation. This period provides an excellent opportunity to gain experience operating as a significant contributor in a normal working environment. Make the best of this opportunity. Interact with the other people and look for opportunities to develop your network for their benefit and yours.

Your academic performance on your CEED project may be assessed on the basis that you used the site work period effectively, so do not allow your efforts to be diverted from your project.

### Site work dates and status

You negotiate with the CEED Client the dates to start and finish on site. Out of courtesy, it is usual to inform their personnel department of your arrangements even though you are not employed by the CEED Client and are not a conventional “vacation student”. In many cases, this will be a necessary step to obtain access to sites, inductions, and client systems. This can also be a way to make sure you are on the radar of the Client’s HR and recruiting teams.

*Make sure your status as a CEED student working on a specified project is properly understood.* CEED Clients which regularly employ vacation students may need this clarified particularly with regard to the length of your time on site (and the fact that you may need to retain access during the semester). If the opportunity to participate in the client’s regular vacation training program, you should take advantage of the opportunity – in many organizations it is an important element of the graduate recruiting process. If difficulties arise, contact the CEED Office.

### Extending or changing the site period

Most CEED Clients will not object if you wish to work on site for longer than the minimum required period. CEED Clients are under no obligation to allow a longer period, or to pay extra if you do work longer. If you would like the CEED Client to pay you for the extra time on site, discuss the matter with them as early as possible, preferably before you start on site.

If you are unable to work the full length of time during the normal period (e.g. summer vacation for Final Year/Honours students), negotiate alternative arrangements with your Academic Supervisor(s) and Client Mentor to accumulate an equivalent period during the mid-year vacation. **You CANNOT make up this time during the semester.** For engineering students, this can be critical, as CEED project site work counts towards your professional practicum.

## Expectations during site work

Expect to spend the majority of your time on site on your project. The CEED Client may offer you an opportunity to gain experience on other interesting matters in their operations. Provided it does not excessively interrupt your project work, you are welcome to take the opportunity, because broadening your experience is a major aim of CEED. If there are any concerns regarding such offers, it would be wise to discuss them with your Academic Supervisor(s) and the CEED Director before accepting.

If your project gives you little opportunity to interact with others on site and see how things are done, it may be a good idea to ask your Client Mentor to arrange some specific "extra" activity to broaden your site experience. Ultimately, the benefits you receive from working on site are in your hands. Make the best of the opportunity!

## Course Requirements for Professional Practicum

If your course has a requirement for a Professional Practicum, your CEED project will usually give you credit for a large portion, if not the whole (e.g. for engineering and computer science students at Honours/Final Year Project level, a CEED project is deemed to cover the full time requirement if the normal site work quota is met and you complete the CEED project). In most cases (e.g. engineering), **you will still be required to submit practicum reports** in the normal manner. If your school requires written confirmation of any practicum, make sure it clearly states that you are doing a CEED project.

# 17. Research and Assessment

- **Assessment of your work may take account of any longer period of work with your CEED project.**
- **Your thesis is the major item assessed.**
- **Attitude and initiative also affect your mark.**

## Academic assessment

Your attitude and performance over the course of your project may be assessed by your Academic Supervisor(s), depending on the assessment policies of your school. However, by far the greatest part of your academic assessment will be based upon your thesis.

Assessors may assume you have made good use of any extended time afforded by your CEED project, *including* the period on site. Make sure you plan appropriately and use it to good effect.

Please note that as the execution of your CEED project is a serious undertaking, the final studentship payment is conditional upon:

- CEED Client receiving the Deliverables specified in your Project Brief;
- CEED Office receiving a soft copy of your thesis.

## Features of a Good Research Project and Thesis

In most UWA schools, project work is assessed predominantly on the thesis document. It is therefore essential that your thesis work be planned, handled, structured, and presented in the best possible way, both physically and intellectually.

Requirements for theses at different levels vary, and you should check what is required for your level and program. At Final year/Honours level, your thesis typically needs to demonstrate the full extent of your academic skills, particularly your ability to:

- a. Find, review and assess critically relevant past work by others in your discipline;
- b. Design and conduct experimental or other creative work to test or develop some hypothesis;
- c. Analyse critically the results, draw careful conclusions, identify and recommend further work;
- d. Write and present a coherent and comprehensive report on the work.

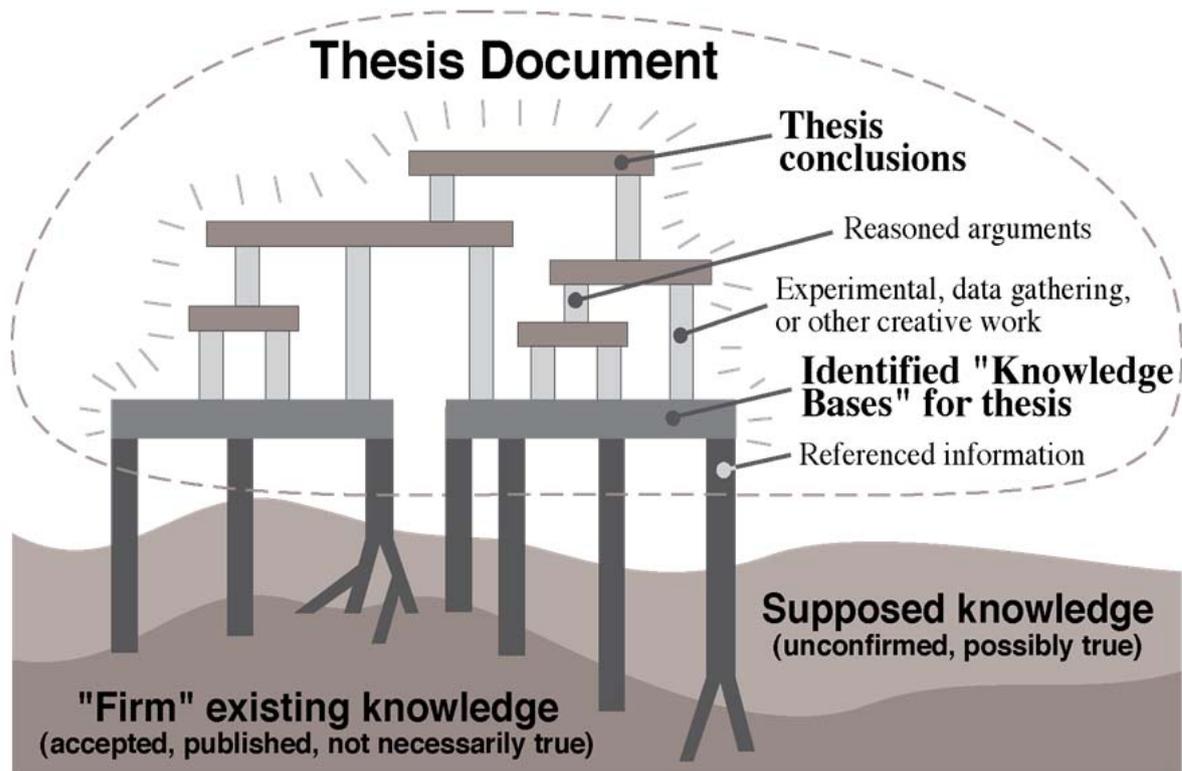
Essentially, your thesis is to prove your ability to find and handle knowledge reliably, accurately, and intelligibly. This implies that you can support every statement and conclusion from the accepted knowledge base of your main and relevant allied disciplines. The diagram on the next page may help you understand what is entailed.

## Identifying the knowledge bases for your work

Identifying the current knowledge bases for your thesis is the objective of the literature review. You need to link all your work back to published literature (rather than to “supposed fact” which may just be

hearsay). Published material may still be wrong or out of context, so you must review literature “critically”, showing yourself watchful for flaws (eg. loose reasoning, or information used out of context). Knowledge which is unconfirmed (if you *must* mention it at all) should be supported as far as possible from firm knowledge. If any uncertainty remains, be sure to say so to show you are aware of it.

A thesis is a polished and self-contained document that stands apart from its links to accepted knowledge – but any research project is only as solid as its foundation. Make sure you provide a broad base of knowledge to ensure a solid foundation.



## Building on the knowledge base

Once you have outlined the knowledge base or bases supporting your work, your aim is to build on that knowledge in some way. This will generally require creative work to gain extra data, and some careful reasoning. From these, you can develop the next "levels of conclusion". Your thesis may contain one or several levels of conclusion, but each must be reasoned from previous knowledge, with or without new data.

## Structuring your thesis

The structure of your thesis document is a vital part of your work. Breaking down the segments of your work appropriately has an immense effect on how you develop your arguments, and deserves considerable attention before you start writing. Poor structure will lead to “fuzzy” boundaries when discussing points, and is frustrating to writer and reader alike. If you ever find it difficult to write a particular section, make sure it is not due to a poor thesis structure. It is a very common cause of de-motivation when trying to write!

As you write your thesis, aim to lead your reader through the document. It is often helpful to show the context or relevance of each section as you enter it, and indicate what should logically be discussed next as you finish a section. This principle holds true for the total thesis (i.e. Introduction and Conclusions), for each chapter, and often for major sub-sections. Any extra information or reasoning which is not an essential part of your main argument, but is still relevant, can be included in appendices and simply referred to in your main text. Be careful when relegating material to an appendix – it's difficult (and annoying) for the reader when material that should be in the main text is banished to the appendices.

## Polishing your thesis document

Your thesis is a polished document (not quite a work of art!), and largely self-contained apart from the references which support it from the public literature.

Remember, the purpose of your thesis document is give a good impression to the reader in both content and presentation. You will therefore need to check it several times for its factual material (including your skill in developing logical arguments), its editorial quality (spelling, grammar, etc.) and its presentation (layout, quality of diagrams, etc.). Getting somebody else to read through it can also be very helpful. High quality takes time; always allow plenty of time to achieve it.

## Identifying further work

There is always more work to be done, whether to develop ideas further, or to confirm tentative conclusions reached in your thesis. In identifying these, you demonstrate that you can see your work in the context of developing the knowledge further. For a CEED project, it will also help the CEED Client identify ways to develop from and extend your work.

## Approach to referencing

References tie your work into existing knowledge. They also provide leads for later researchers to explore the subject further. It is therefore important that references be linked appropriately and carefully into your text. There are many approaches to handling references, some more suitable than others, so choose carefully. Check with your Academic Supervisor(s) to find out if your school has a preferred system.

Some helpful notes are available from the library website, at [Study support \(uwa.edu.au\)](http://uwa.edu.au).

Although popular among journals (where space is at a premium), the numbering system is not always best for a thesis because it gives no immediate indication of the chronology and author of works to which you refer. One popular alternative is the APA (or "name-year") system which takes up more space in the text, but gives the reader useful extra information. It can be handled in several ways, offering some variety in your text. For example: "An early study (Smith and Bloggs, 1987, p. 96) showed that references in theses were useful. In two later surveys of students, Jones (1994a, p. 3; 1994b, pp. 426-28) found that nearly half preferred to omit references since it avoided recording so many names." You may then list the references alphabetically in the reference section of your thesis (which also avoids the need to re-number references and citations every time you edit your thesis....)

## Harness the experience of others

There is a large pool of experience available to you. Your Academic Supervisor(s) can help you make decisions on the structure of your thesis document. Discuss your ideas and concerns as soon as they arise.

Take advice also on timing to make sure you are leaving sufficient time to complete the necessary tasks. They usually take longer than you think!

Your Academic Supervisor(s) has considerable experience with theses. Harness it. As early as possible, give your Academic Supervisor(s) a fully edited "final draft" of one or two thesis chapters so that you can easily implement any resulting suggestions in the remainder of your thesis.

It is sometimes helpful to look at examples of theses from past years, but remember two important points: (a) they are not perfect, and (b) there is more than one way to present a good thesis. Do not feel bound to imitate previous theses. They may have been regarded as good despite some faults, such as being too long.

### **Mentor approval of thesis**

Your thesis might contain information of a sensitive nature with respect to your CEED Client. Discuss this matter with your Client Mentor, and submit your draft thesis to your Client Mentor in good time. Your Client Mentor will need to confirm that no special arrangements are necessary for marking or processing your thesis. If necessary, you may need to get your school to arrange for your thesis markers to sign a confidentiality Agreement. The CEED Office has a standard document available.

If you have any concerns at all about these matters, discuss them with your Academic Supervisor(s) or the CEED Office. Do not leave it to the last minute. They can become extremely disruptive at a time when you do not need any extra distractions!

# 18. Project Close Out

- **It is important that you close out projects with your clients in a professional manner**
- **Deliverables must be submitted to the client within 4 weeks of the submission of your thesis**
- **It is good practice to arrange a final close out meeting with your Mentor and Supervisor. It would be logical to transfer Deliverables to the client at this meeting**

## Introduction

In professional life, it is critical to maintain your relationships with clients and colleagues by closing out projects in a professional manner. Failing to do so can leave a poor impression, which will adversely affect your chances of working with an organization or colleague in the future. Closing out a project professionally will leave a good impression, enhancing your standing with clients and colleagues. The effect can be profound, particularly since the way you close a project will be the last impression that you leave with people.

The process of closing out a CEED project should be straightforward, merely requiring students to display the discipline to take the final steps. These steps should normally include:

- Transferring all Deliverables to the client, and completing all associated activities, within 4 weeks of the submission of your final thesis.
- Arranging a close out meeting with (at least) your Client Mentor and Academic Supervisor.

CEED project close out strongly influences the prospects of Clients sponsoring future projects, and directly affects the reputation of the University within our Clients. For these reasons, as well as your own reputation, it is critical that you close out your CEED project in a professional manner. It is an important part of your personal legacy in the CEED program and the University.

## Deliverables

Your Deliverables will have been defined in the Project Brief (and any subsequent amendments to the brief). All Deliverables set out in the Project Brief (and amendments) **MUST** be transferred to the client within 4 weeks of the date that you submit your final thesis. You must also provide a copy of the Deliverables to the CEED Office.

If the Deliverables are satisfactory, your Client Mentor will sign a form stating that the Deliverables have been received. When this acknowledgement is received in the CEED Office, you will be able to receive your final payment.

When preparing your Deliverables, be sure to take the same care that you would in preparing your thesis. The Deliverables represent your lasting legacy at the client organisation, and readers or users will form

their impression of you based on what they see. A client may also decline to accept a document that is presented unprofessionally. Remember that each project has \$200 allocated for deliverable preparation costs; this is to be used to ensure that any documents provided to the client are professionally prepared and/or purchase data storage tools (such as external hard drives) to facilitate data transfer to the client.

It is essential that you adhere to the deadline for submitting your Deliverables. The CEED Office cannot invoice the client for the second half of the project fee until you have provided satisfactory Deliverables. The CEED Office will check on the status of Deliverables as the deadline approaches. **If your Deliverables have not been submitted by this deadline, the CEED Office may make arrangements with the relevant faculty to have your grades withheld.** This will obviously affect your graduation or future enrolment in the University.

## Close Out Meeting

When completing a project, it is good practice to convene the project team for a final project meeting. This provides an opportunity for members of the team to discuss the results of the project, identify areas where the execution of the project might have been improved, and propose directions for future work.

In a CEED project, such a meeting could provide an opportunity to present your findings to a broader audience at the client organisation. It provides an ideal opportunity to present your Deliverables to the client, and potentially even have them sign off on their acceptability. It provides an opportunity for your Client Mentor and Academic Supervisor to develop their relationship, which may prove to be important for UWA and the CEED program. Perhaps most importantly, it provides an opportunity for you to thank your Client and Academic Supervisor, and let them know where you'll be headed in the future (you never know when they may have a reason to call you to offer opportunities down the track!).

As with Deliverables, it is essential to complete this meeting within four weeks of submitting your thesis. As this meeting drifts further, its impact can be diminished, and the difficulty of arranging the meeting increases (you may have to travel for work, as may Client staff, and Christmas or school holidays can become a problem).

**While close out meetings are not compulsory at this time, they are STRONGLY recommended.**

## Drop by the CEED Office!

As a last step, make sure you drop by the CEED Office as you wrap up your project. In addition to wrapping up administrative details, we would like to get your future contact details so that we can invite you, as CEED alumni, to attend functions such as the CEED seminar.

# 19. Advice from Past Students

- **Those who have "been there and done that" have suggestions to pass on to you**
- **Their skills, experience and personalities differ from yours, so apply any suggestions with a good measure of wisdom**
- **Remember their names – you may run into them in your future career! Many CEED alumni hold influential positions around town and the nation.**

## Introduction

The suggestions below come from past CEED students as advice they would like to have had themselves. They are grouped under various categories for convenience, and are slightly edited to avoid comments which could be confusing or counter-productive.

## Communication

Make sure you talk to your Mentor (a lot) to find out exactly what they want.

*Deanne Renting (2001/2002)*

Keep Supervisors abreast of the changes in the brief.

*Anthony di Felice (98/99)*

Keep your spirits up and COMMUNICATE, COMMUNICATE, COMMUNICATE! Choose to appear "slow" rather than get into bigger problems with Client Mentor or Supervisor. *Katia Defendi (1996/97)*

Consult your Supervisors as often as possible - they can provide a wealth of knowledge *Suresh Vadnagra (1996/97)*

## Initiative and Perseverance

25% of your time may be spent "chasing up" things. It's your project, your responsibility.

*Ryan Heng (2001/2002)*

You really get stuck into a project that's yours (even if they sound boring to start with), so enjoy it! Explore!

*Kenny Daubermann (2001/2002)*

Nothing beats hard work!

*Nicholas Yau (2001/2002)*

PERSERVERE - the satisfaction and reward is worth it!

*Jason Page (2000/2001)*

Learn to love your project and in that process, you will love to learn more than just your project.

*Shan Goh (98/99)*

The final outcome of the CEED Project normally turns out much better than you expected. Therefore, don't give in easily and get a lot of support from Supervisors, Mentors and people working around you.

*Kin Keong Chor (1997/98)*

Put in your best effort as there is nothing more rewarding and satisfactory than succeeding.

*Suresh Vadnagra (1996/97)*

Make maximum use of company resources.

*Craig Stannard (92/93)*

Don't rely on Supervisors to help you, if you want anything you have to do it yourself. You get out of it what you put in.

*Peter Phan (91/92)*

Ultimately it is your project, you will have to make decisions and push people around, etc. You know more about your project than anyone else. Therefore if something is bothering you even slightly, talk to both of your Supervisors.

*Tim Greville (91/92)*

## **Guidance and Networking**

Your Supervisor, Mentor, fellow colleagues and CEED students are doors to an infinite amount of useful information.

*Kaye Lim (2001/2002)*

Ask LOTS of questions if you do not FULLY understand!

*Ryan Heng (2001/2002)*

Get to know at least a couple of other CEED students in your area of study. Keep in contact with them during vacation work so you can support each other. This is often the hardest period.

*Sarah Prout (2001/2002)*

Keep in close contact with your Mentor, from as early as possible.

*Ze Kwan Ng (2000/2001)*

Talk to your Supervisors - they are always there to help.

*Julia Clapsis (98/99)*

Network with other professionals in the office since your Mentor may not always be available.

*Anthony di Felice (98/99)*

Talk to people at the company; be interested in what they do and they'll be interested in what you are doing. That's very valuable.

*Philip de Vos (98/99)*

Students should use the Mentor and others as much as possible. A good engineer (*CEED student*) should ask MANY questions - try to pick the brains and knowledge of others more.

*Shalini Cooray (96/97)*

Try to find out early on who your project is likely to help so you can get lots of advice.

*Craig Stannard (92/93)*

Ask questions and make contacts.

*Peter Cawley (91/92)*

Should anyone suggest a particular way to tackle a problem, don't just blindly follow their suggestion. Make sure you understand fully what is going on before proceeding.

*Cameron Parrotte (92/93)*

Get more Supervisor guidance, especially at the beginning.

*Rowena Cole (91/92)*

If you don't feel things are going as they should, tell your Academic Supervisor(s) about it! Discuss how things are going.

*Dorothy Hatch (91/92)*

You know more about your project than anyone else. Therefore if something is bothering you even slightly, talk to both of your Supervisors.

*Tim Greville (91/92)*

## Planning

Start writing early as it really clarifies the project and you WILL find holes that you need to fill!

*Sara Haase (2001/2002)*

Be prepared for the worst and you can take everything in your stride.

*Teck Hua Goh (2001/2002)*

Be organised

*Yvette Manolas (2001/2002)*

Get organised and everything will be easy.

*Brett Manners (1997/98)*

Find out who knows what in the organisation - fast. Plan in advance any financing requirements and set realistic project boundaries with your client Mentor and Academic Supervisor.

*Shaun Campbell (96/97)*

It's a good idea to use the DDS style of planning.

*Simon Pritchard (92/93)*

Make maximum use of company resources.

*Craig Stannard (1992/93)*

Try to identify dead ends. Arrange to get information and equipment that may (otherwise) involve waiting, before vacation employment.

*Michael Duffy (1991/92)*

## **Project Brief**

Before finalising the Project Brief, some initial research into the topic is essential to assess whether the desired outcomes are realistic.

*Jason Page (2000/2001)*

Clearly establish your Project Brief and revise it continually as you progress.

*Anthony di Felice (98/99)*

Find out what is expected from both the company and the school (faculty). Their expectations and requirements are often not the same.

*Sarah Lee (98/99)*

Look very closely at the project before proceeding. Even if it is a top company, top Supervisor, etc. If the proposed work is not good for a research project you will suffer later, as will other aspects of your course and self-esteem - by which time it will be too late.

*Johanna Kieboom (91/92)*

Discuss expected result and relationship with (yourself as the) student, etc.

*Rowena Cole (1991/2)*

## **Documenting**

Put everything in writing

*Yvette Manolas (2001/2002)*

Submit all information to Mentor in writing

*Steven Richardson (2001/2002)*

Document and date details of all meetings and random ideas. Always back up work (hard/soft copy)

*Shawn Fernando (2001/2002)*

Record details of meetings and where data/info is sourced from.

*Andrew Macky (2000/2001)*

Keep a good log book.

*Ozan Perincek (98/99)*

Document everything.

*Andrew Nilsson (1997/98)*

Keep an organised file

*Suresh Vadnagra (1996/97)*

No matter what you do, no matter how trivial it appears at the time, WRITE DOWN what you have done. Explain everything and do it clearly. Having to come back in 12 months and try to remember what you have done is virtually impossible unless you have explained it or do it again.

*Cameron Parrotte (1992/93)*

## **Scheduling & Time Management**

Keep working on it throughout the year.

*Joshua Hii (2001/2002)*

You may think you are starting your honours project early and therefore have an advantage over other honours students. But do not be deceived, you have twice the time to work on a project three times the size of other honours students' projects.

*Nigel Lengkeek (2001/2002)*

Work hard early.

*Anthony Lamb (00/01)*

Focus on completing set tasks before progressing to avoid having to re do previous work.

*Aaron James (00/01)*

Work hard from day one! Stress early, cruise later!!

*Philip de Vos (98/99)*

Work hard/panic/stress early in the project - there is always much more involved than you first think.

*David Zacher (98/99)*

Tasks always take longer than you think.

*Julia Clapsis (98/99)*

Start on the project early. I mean REALLY EARLY!!! Never let the project down for other work and come back for it. Consistent work is a MUST for CEED.

*Poh Hing Foong (98/99)*

Make good use of the summer vacation. You don't realise at the time what a luxury it is to be able to concentrate on your project without a million other things - assignments, lab reports etc, - to do as well.

*Kathleen Shaw (98/99)*

Try to finish the practical side of the project during the summer break.

*Ozan Perincek (98/99)*

Start your project early and try to do as much as possible during vacation work.

*Alison Foo (1996/97)*

Do everything you can during the Vacation. Set aside one whole day per week throughout the project.

*Michael Willson (1996/97)*

Start early

*Suresh Vadnagra (1996/97)*

Start early and include at least two months of stuffing around, in which you'll achieve nothing except getting your equipment.

*Fiona Wilson (1996/97)*

START EARLY!!!! It really does save headaches in the last weekend.

*Jack Barnett (1996/97)*

Do as much research and familiarisation as you can in the first four months as this is vital to the rest of the project. Make as many contacts as you can as they will be invaluable later on.

*Irene Yung (1996/97)*

Start ASAP - if it is to be, it is up to me.

*Mark Azzopardi (1995/96)*

Start very early. Start getting into the technical aspects (getting your hands dirty) as soon as possible, to get an idea of the project.

*Paul Nolan (1991/92)*

Work like a dog during the summer vacation to get a lot of it done.

*Peter Phan (1991/92)*

Don't get slack in 1st semester of 4th year.

*Craig Stannard (1992/93)*

Do not wait until 4th year to get right into it.

*Clint Walker (1991/92)*

Arrange to get information and equipment that may (otherwise) involve waiting, before vacation employment.

*Michael Dufty (1991/2)*

## Thesis

Start writing as early as possible – you feel like you never know enough to start writing during the year, but this never changes, because the more you know, the more you realise how little you know.

*Sabina Fahrner (2001/2002)*

Start writing your thesis early, even if you haven't got all your results, you can write up background information

*Fiona Fong (2000/2001)*

Write up the sections of your thesis as you complete them during the year.

*Jason Page (2000/2001)*

No matter how much work you're doing, make sure you have enough material to write a thesis.

*Reto Meier (98/99)*

Reference everything you do very well so you can find it again.

*Peter Cawley (1991/92)*

## **Extra Suggestions Resulting from CEED Student Feedback**

**Becoming Known on Site:** It is very useful to become generally known on site. This makes life more stimulating, and can bring in some extra allies. On arriving at site (and with your Mentor's permission), try sending out an email to the team (or similar general message) outlining very briefly who you are and what you are doing on site. You could invite anybody interested to contact you with suggestions or other matters of interest (Note: get your Mentor to check your message doesn't contain anything confidential or controversial!).

**Dress on Site:** Recognise that differences in "dress" can generate barriers between you and others. If you are dressed very much more formally than the other persons, you could be "classified" (rightly or wrongly) with people who may have lost their respect (or are even resented). However, if you are dressed significantly "lower" than them, you may find it hard to gain their respect.

**Terminology and "Crossed Wires":** Be aware that people use jargon and other terms in differing ways, and they may describe an identical thing using apparently different terms. It is wise to make sure you are talking on the same wavelength. One student had an apparent disagreement with a Mentor over several weeks before finding out that they were in fact describing much the same thing, but using different terms!

**Effects of Company Morale and Politics:** Do not imagine you will be unaffected by the morale and office politics of other people on site. Be prepared to bolster your own morale and motivation to offset any negative attitudes on site. If necessary, contact your Academic Supervisor(s) or the CEED Office for encouragement and advice.

**Persistence:** Past students have remarked that persistence, even in the face of much discouragement, paid off. They decided to remain focused on their objectives (often with much struggling) and eventually "broke through" the barriers.

**Keep Your Progress in Perspective:** It's common for students (and others) to underestimate what they've already achieved with their project. Don't do that! Try writing down early in your project a list of things which you believe will constitute good progress, if achieved. Then seal the list in an envelope (give it to your Supervisor(s) if you like) and open it after (say) six to eight months. You may be surprised how much you've achieved! Remember, getting experimental work set up always takes a lot longer than you'd think - that's normal!

**Be Willing to Ask for Help on Site:** You will not be flooded with offers of help with tedious or repetitive tasks on site! If there are simple, tedious projects to be done (be sure they do not require more knowledge or skill than you expect), ask your Mentor if anybody could help you get it done