
CVEN9888

Environmental Management

I. Introductory Notes 2013



University of New South Wales

Contents

1. INTRODUCTION

2. SUBJECT PROFILE

- 2.1 Calendar Description
- 2.2 Objectives
- 2.3 Duration and Type of Instruction
- 2.4 Lecture Schedule & Study Guide

3. ASSESSMENT

- 3.1 Assignment and Examination Schedule
- 3.2 Assessment Criteria
- 3.3 Assignment Policy
- 3.4 Exam

4. LEARNING METHODS

- 4.1 Approach
- 4.2 Staff
- 4.3 Communications
- 4.4 Texts and References
- 4.5 General

5. GUIDE-LINES FOR ASSIGNMENTS

- 5.1 Calculations Format
- 5.2 Reports Format
- 5.3 Preparation of Assignments

1 Introduction

These introductory notes provide information on the learning and assessment approach for this subject.

Before commencing this subject, work your way through the BB9 (Blackboard 9) website for this course under “TELT” in the Quick Links on the UNSW home page (www.unsw.edu.au). Contact the Subject Lecturer promptly if you discover any anomalies.

Please take the time to read all these introductory notes, they have been prepared on the basis of common problems experienced by students in the past, and should therefore save you wasted time during the session.

Additional notes and tutorial exercises may be issued on the TELT website for the course during session, depending on particular difficulties experienced by internal and external students.

Please retain an electronic copy of everything you send to the University.

2 Subject Profile

2.1 Calendar Description

- ◆ 6 Units of Credit
- ◆ No prerequisites
- ◆ Introduction to sustainable development principles; environmental impact statement techniques; environmental management systems; tools for the analysis and management of environmental impacts of engineering projects, including an introduction to environmental risk assessment, and more detailed treatment of a range of environmental material accounting techniques, including Life Cycle Assessment, Ecological Footprints, Material Flux Analysis and other material accounting techniques.

2.2 Objectives

The objectives of this subject are to :

- ◆ Provide an introduction to ecologically sustainable development principles and investigate in some detail how ESD might be operationalised through appropriate Environmental Impact Assessment of new project proposals, and Environmental Management Systems for corporations and regions. Provide an introduction to the use of some developing tools to assist in implementing EISs and EMSs, including environmental reviews and audits, Life Cycle Assessment, and Materials Flux Analysis.

Students will be provided with concepts and reference materials in the modules and will be expected to apply these to actual projects taken from the real world.

2.3 Duration and Type of Instruction

The internal version of this course is one session, 3 hours per week; nominally 2 hours lectures and 1 hour tutorial. The subject lecturer anticipates that students will need to spend on average 10 hours per week in total to gain a satisfactory understanding of the course.

2.4 Syllabus, Lecture Schedule & Study Guide

The lecture schedule for CVEN9888 is outlined in Table 2.1. The Guided Learning Units generally follow this schedule; but will vary from year to year according to lecturer availability and the nature and scheduling of assignments. The GLU numbers will be maintained, and therefore will not always match the lecture schedule. Please refer to MyUNSW for the dates for each academic week. Please note the Break at Easter does not have an academic week number.

Table 2.1 Syllabus & Lecture Schedule for CVEN9888, internal class

WEEK	LECTURE R	THEME	TOPIC	GLUs
1	S Moore	Background	Subject introduction and overview, introduction to ESD	1
2	S Moore	Environmental Material Accounting At goods, process and regional scales	Overview of Environmental Material Accounting	5
3	S Moore		Ecological Footprints	9
4	S Moore		MFA1	8
	Easter Break			
5			No lectures allowed in Week 5 To allow for site visits in courses	
6	S Moore		MFA2	8
7	S Moore		LCA	7
8	S Moore		MIPS/SPI	6,10
9	S Moore		National Material Accounts	11
10	S Moore	Framework of environmental control and reporting	EIS	2
11	S Moore		EMS	3
12	S Moore		SoE reports	3
13	S Moore		Sustainability criteria and review	12

Distance students use the current lecture schedule in the internal class to allocate your time to each topic. You will see that I also use this schedule in setting discussions via the TELT (Technology Enabled Learning and Teaching) Gateway (see details below).

Stephen Moore, Senior Lecturer, Room Civil Eng 308, ph +612 9385 5073; email s.moore@unsw.edu.au

3 Assessment

3.1 Assignment and Examination Schedule

Assignment No.	Topic	Value	Due Date
1.	Ecological Footprints	20%	Lecture Wk6 (15 April)
2.	Environmental Material Accounting	40%	Lecture Wk10 (13 May)
3a Internal	Short quizzes at beginning of lectures	10%	Week 2-12
3b Distance	Participation in BB9 via TELT	10%	Week 1-12
4	Exam	30%	During S1 Exam Period (14 June–1July 2013)

Assignment 1 and 2 should be undertaken in groups of 3 (2 will be allowed if there are not enough students). Only one report with the names of all group members on the cover sheet should be submitted.

3.2 Assignment Marking Criteria

Specific guidance on the value of components of each assignment is provided with the Assignments in this Subject Package. It is difficult to be more precise than the guidance provided without being too prescriptive and taking away the opportunity for initiative from the student.

In general terms, all assignments will be assessed against the following criteria :

- o Evidence of understanding of concepts; Exact correct numerical answers will rarely be required or be appropriate, but gross numerical errors which are left unchecked, and which indicate that the student does not understand the concepts, will be marked down heavily.
- o Ability to apply concepts to real world problems, and to make judgements based on incomplete data and the need to simplify systems in order to develop solutions.
- o Clarity of description, explanation and attention to the focus of the assignment.
- o Ability to structure an assignment logically and limit it to a reasonable length.

Please complete and attach the assignment cover sheet to each completed assignment. It enables the Subject Administrator to easily acknowledge receipt of the assignment by the due date. It is the student's responsibility to ensure the assignment is received by the School by the due date. If you do not complete the cover sheet you will not readily know if your assignment has been received, and the lecturer will not be able to return the marked assignment to students.

3.3 Assignment Policy

Extensions of time will only be given in the case of medical problems or personal emergencies, and only if requested prior to the due date. Work and other extra curricular activities (holidays etc.) are not valid reasons for extensions of time without penalty.

A penalty of 10% per week of the total mark for the assignment will be applied, commencing one day after the due date.

No student may pass a subject until all assignments have been completed and returned to the School. An assignment will be considered completed if it is allowed a mark of 35% or more before penalty points, i.e. a significant effort must be demonstrated.

The date used in assigning late penalties is the date that the assignment arrives at the School, **not** the date that it is sent by the student. **Faxed copies cannot be accepted. Internal student should submit in class or in my assignment submission box opposite my room. Distance students should email assignments as an attachment.** Send it to the s.moore@unsw.edu.au; and the course coordinator will reply with a "received and printed ok message". If you do not receive this confirmation, then your assignment has not been received, and you should phone the course coordinator.

If a personal emergency (not a peak in work load) arises that may cause a delay in completing or sending the assignment, call the subject co-ordinator as soon as possible.

Students should take note of the general guidelines provided in these Introductory Notes and any special requirements listed in individual assignments.

3.4 Exam

The exam will be a 2 hour closed book exam during the normal exam period. You are allowed to bring in one A4 sheet of paper with hand or typewritten notes, formulae, diagrams on both sides. The questions will generally be similar to the shorter questions in the Guided Learning Unit Exercises. There are no previous exam papers available. Calculators allowed are described at:
my.unsw.edu.au/student/academiclife/assessment/examinations/Calculator.html

The Exam date is set by Exams Branch, and is confirmed in about Week 10 of session. You can access the time and date of the exam via your MyUNSW.

Distance students undertake the exam at their place of work on the same day as the internal exam, under the supervision of a responsible, non-related person who agrees in writing to provide appropriate exam conditions and supervision. It is the student's responsibility to arrange for exam supervision. The University does not make payment to the student's exam supervisors.

An Exam Supervisor's nomination form will be provided by the Course Administrator.

No supplementary exams are held for postgraduate courses. Do not make arrangements that will prevent you from doing the exam in the Exam Period, or after the exam date is set in Week 10, on the day of the exam.

4 Learning Methods

4.1 Approach

Students have four major resources to assist their learning:

- The lectures and exercises undertaken during the lecture session. These are generally selected from the Guided Learning Units. Distance students have access to lectures via streaming audio on current lectures on Lectopia, accessed via UNSW Blackboard on the TELT Gateway (see below).
- The Coursenotes provided in Part 4 of this Subject Package on the BB9 webiste, which should be studied actively by reading in order to answer the Guided Learning Units Exercises. These exercises highlight the important aspects of each topic. The Exercises will not be marked or assessed, but assistance will be provided by the Subject Lecturer if difficulties are encountered.
- o The lending facilities of the Library and advice from the Course Lecturer.
- o Other students currently undertaking the course externally. Contacts should be established in Week 1 of the course via UNSW Blackborad via the TELT Gateway. Your colleagues are an invaluable source of assistance and should continue to be so after completion of the course.

4.2 Staff

The course co-ordinator and principal lecturer is:

Stephen Moore
Senior Lecturer in Environmental and Waste Management
Ph. 02 9385 5073
Room 308 Civil Engineering.
Email : S.Moore@unsw.edu.au

Consulting times are those shown on the notice board Room308 or when the door is open.

All academic enquiries and questions relating to Coursenotes and assignment technical aspects should be directed to Stephen Moore.

4.3 Communications

The School of Civil & Environmental Engineering is continually trying to improve communications lines with and among students. The major modes are :

- ◆ Internet : you must have access to the Internet for this course. Once connected, at home, at work or the local library, you will be able to make use of the following :
 - Email : electronic mail communication with lecturers and other students, including students undertaking the course internally.
 - World Wide Web : all documents are now available on the web, via the BB9 website for the course.
 - An Email Mailing list has been established for this subject on the Civil Engineering server computer. Students are automatically subscribed to the list with standard UNSW email addresses; you must use your UNSW email for communication with UNSW. The mailing list allows lecturers to communicate with all students in the class; but the current arrangement does not allow individual students to connect to all other students. You should do this via the BB9 website for the course.
- UNSW Blackboard an online teaching aid accessed via the TELT Gateway at:
 - www.unsw.edu.au under STUDENTS.
 - Support for UNSW Blackboard is available on-line at this web site.

If you have problems, email me on s.moore@unsw.edu.au

4.4 Texts and References

4.4.1 Texts

There are no texts set for this subject. Coursenotes via pdf files are provided for this course.

4.4.2 Other References

The following references may be useful for assignments and to practitioners. They are available from the Library.

Commission for the Future, 1990; Our Common Future; Oxford University Press, Melbourne.

Yencken D and Wilkinson D, 2000; Resetting the Compass: Australia's journey towards sustainability; CSIRO Publishing, Collingwood, ISBN 0 643 06385 4

Brunner PH and Rechberger H, 2004; Practical Handbook of Material Flow Analysis, Lewis Publ, ISBN 1-5667-0604-1

Ayres, RU and Simonis UE; 1994; Industrial Metabolism: restructuring for sustainable development; United Nations University Press, Tokyo; ISBN 92-808-0841-9

4.4.3 UNSW Library

To obtain materials external students may request books from the UNSW Library by post and also obtain books and articles from non UNSW Library collections through interlibrary loan.

This is the preferred method for external students.

<http://info.library.unsw.edu.au/external/services/externals.html>

First time users need to register on-line at

<http://libraryinfounsw.altarama.com/reft100.aspx?key=OffCampus>

After initial registration, you simply make requests through the Library's Catalogue (LRD) by logging into [Your Borrower Record](#) and selecting the ILL Request tab.

The library pays the forward mailing charges for materials sent to you. Return costs must be paid by you. To ensure that the items are not damaged in transit a padded postage bag should be used.

Off campus access to online library resources

For information on usernames/passwords and hardware and software requirements necessary to remotely access online library resources please see the web page:

<http://info.library.unsw.edu.au/web/using/require.html>

Library online resources

To learn how to use library resources to locate texts and journal articles please refer to the online tutorial ELISE (postgraduate) located on:

<http://pgelise.library.unsw.edu.au/>

Subject Guides

Developed by discipline specialists these guides identify major print and electronic resources in specific subject areas. The Engineering guide is <http://subjectguides.library.unsw.edu.au/content.php?pid=7632>

To locate an electronic journal/article and databases via UNSW Library Sirius

Please go to the Electronic Resources page: <http://sirius.library.unsw.edu.au/>

Click on **Find e-Journals**

Then login (*top right hand* of screen) with your z1234567 student number and Unipass. This will allow you free access to many e-journals and articles.

Find out what databases are available in your subject area in Sirius by selecting **Find Resources** and then **Category**. For further help with databases see our helpsheets <http://info.library.unsw.edu.au/skills/helpsheets.html>

For further information on how to use the library catalogue (LRD) to locate texts and journal articles please see the How to use library web page:

<http://info.library.unsw.edu.au/skills/howto/howto.html> As the UNSW Library online environment is constantly changing, it is of benefit for students to use these online How To Use guides for the step by step mechanics. Students can then use these in their own time and/or in conjunction with the Library service in person or by phone 9385 2650 or via an online form <http://info.library.unsw.edu.au/web/help/help.html>

Referencing your work

Use the how to guide

<http://info.library.unsw.edu.au/skills/howto/referencing/lrefcr.html>

Links to reference management software Endnote & web-based Refworks

<http://info.library.unsw.edu.au/skills/endnote.html>

Local Academic Library Access

Users may join the University Libraries Australia (ULA) [Reciprocal Borrowing Scheme](#), to borrow books from more geographically convenient local academic libraries where access is possible.

See <http://info.library.unsw.edu.au/usd/services/off/reciprocalunsw.html>

New Search Engine for scientific journals

SCIRUS is an Elsevier's Science search engine covering over 26 million scientific journal articles. It searches over 167 million science-specific Web pages, enabling you to pinpoint scientific, scholarly, technical and medical data on the Web; find the latest reports, peer-reviewed articles and journals that other search engines miss. Among the other subject areas, SCIRUS covers Engineering, energy and technology and environmental sciences.

Access is via Sirius: <http://www.scirus.com>

Similar to the Google Scholar library links, we are pleased to announce that the 'Library Partner links' feature has been enabled in SCIRUS). It means that you can now link back to full-text journal content where UNSW Library has a subscription. Search results retrieved for journal items will now have a "Find it@UNSW" link if

you set up UNSW Library as your default library in SCIRUS Preferences. This feature also works from off-campus. Instructions for setting up the links:

Go to SCIRUS <http://www.scirus.com>

1. Click on “Search Preferences”
2. Next to “Library partner links” select the “enable” radio button
3. Click on the letter “U” under “Choose from Institutes”
4. Select “University of New South Wales” from the drop-down menu
5. Click on the “Save Preferences” button. You are automatically taken back to the search page.
6. Enter a search string e.g. “diabetes and children”
7. Next to the number of records found, click on “journal results”
8. The results list shows articles with “Find it@UNSW” as a hyperlink
9. Click on Find it@UNSW to open “SFX Services for this record” window

UNSW Library also has a ‘Library Partner links’ to Google Scholar: see <http://www.library.unsw.edu.au/ubb5.45z/Forum2/HTML/000617.html>

4.4.4 Dates to Note

Refer to MyUNSW for Important Dates available at:

<https://my.unsw.edu.au/student/resources/KeyDates.html>

4.4.5 Plagiarism

Beware! An assignment that includes plagiarised material will receive a 0% Fail, and students who plagiarise may fail the course. Students who plagiarise are also liable to disciplinary action, including exclusion from enrolment.

Plagiarism is the use of another person’s work or ideas as if they were your own.

When it is necessary or desirable to use other people’s material you should adequately acknowledge whose words or ideas they are and where you found them (giving the complete reference details, including page number(s)). The Learning Centre provides further information on what constitutes Plagiarism at:

<http://www.lc.unsw.edu.au/onlib/plag.html>

4.4.6 Academic Advice

For information about:

Notes on assessments and plagiarism,

School policy on Supplementary exams,

Special Considerations,

Solutions to Problems,

Year Managers and Grievance Officer of Teaching and Learning Committee,
and

CEVSOC.

Refer to Academic Advice on the School website available at:

<http://www.civeng.unsw.edu.au/info-about/our-school/policies-procedures-guidelines/academic-advice>

5 Guidelines for Assignments

Assignments will consist of calculations or short reports or both. Guidelines on the presentation of calculations and reports are provided in 5.1 and 5.2, and guidance on more general issues of preparing assignments are provided in Section 5.3.

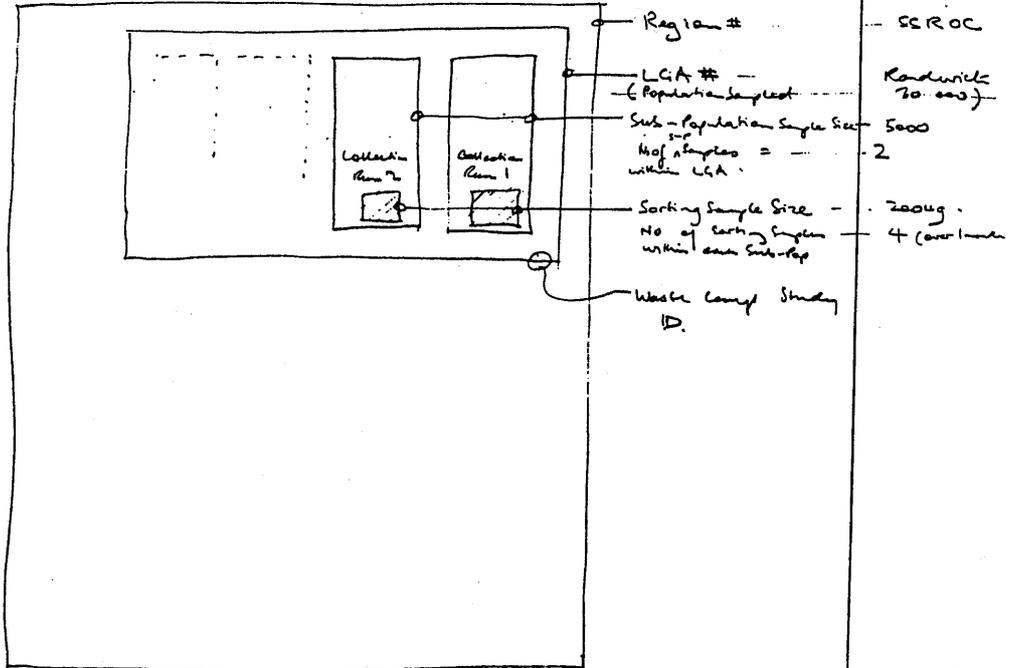
5.1 Calculations Format

Calculations should be undertaken on squared or blank paper. Note the following suggestions (most assignments will have part of the mark on presentation);

- Provide a table of contents for calculations
- Title block on each page showing:
 - Assignment No., part
 - Calcs By
 - Date
 - Sheet No.
- List data and assumptions at start of each section of calculations.
- A reference list on the right hand side showing sources of data, cross reference to other parts of the calculations.
- Use headings and section numbers.
- Use diagrams and graphs where possible.
- Use a sharp HB or B pencil.
- Spread out your calc's
- Use words to guide the checker through the workings.
- Use tables to summarise calculations and outcome of calculations.
- Use spreadsheets and tabular calculations where any repetitive calculations are required.

3.2 Waste Streams Relational Model

WASTE COMPOSITION : Real World Model :



Example
 - SSROC
 Roadville
 20,000

Could also be appropriate for 2 or 3 LGAs
 as the Population sampled for one waste camp study ID

Waste Camp Study ID	Region	LGA	Sub-Pop ^l Sample Size (Pop ^l)	No of SS samples in LGA (No)	Sorting Sample Size (mg)	No of Sorting Bins per SS (No)
2001	203	1234	5000	2	200	4
2001	203	1235	5000	2	200	4
2002	203	1234	5000	2	200	4
2003	203	1235	5000	2	200	4

} The Camp data must be for whole region in WSCD Rel
 } Composition Data provided for each LGA in WSCD Rel

FIGURE 5.1

5.2 Reports Format

Where an assignment requires presentation in the form of a report, the following should be included:

- Title Page
- Table of contents
- Page numbers
- Headings, sub-headings and sub-sub headings, all numbered
- References, providing full details in a List of references or the back of the report. Reference all data
- Appendices to include:
 - copy of the question (the Brief)
 - detailed calculations and workings (summarize in tabular form in the report).
- Write on one side of paper only so the marker can make notes on the blank facing page. Use 12 font single or 1.5 spacing.
- List points with brief expansion underneath the point, rather than provide verbose formal descriptions. e.g. use the following format instead of burying the important points in pages of text:

"The three factors governing the performance of incineration systems are:

- Time: the residence time of solids and gases at the elevated temperature affects destruction efficiency.
- Temperature: high temperatures lead to improved destruction efficiency.
- Turbulence: highly turbulent well mixed reactors achieve better destruction efficiencies.

These three factors work in combination to determine the overall efficiency of the incineration process. For instance:

- Short duration residence times at high temperatures can achieve the same destruction efficiency as longer residence times at lower temperatures and higher turbulence. e.g. 2 sec residence at 1200 °C in a rotary kiln has been shown to provide equal destruction of PCBs as 900 °C in a fluid bed incinerator (Dillon, 1986)."
- Make assumptions clear and explicit.
- Typed reports are required .

- Submit your report with a corner staple, with the standard cover sheet provided as the front cover.

5.3 Guidance on Assignment Preparation.

The course is based on 80% assignments and the remainder exams. Getting the feel of what the lecturer is looking for in the assignments may be difficult at the start of a subject and especially difficult for an external student who does not see the lecturer every week. The following guidelines should be generally useful, and more specific requirements for each assignment should also be noted.

5.3.1 Get Started Early

Penalties for late submission of assignments are strictly enforced.

Most assignments take a reasonable amount of work even if you know the material very well. Assignments done hastily at the last minute often miss an aspect of the problem or contain errors in calculation that make the results meaningless.

Simple calculation errors are marked more harshly in assignments than in exams, because the assignment should be a finished product, not just an indication that you understand the method.

Gross errors indicating that you do not understand the scale of the problem are very harshly marked.

5.3.2 Budget Your Time

Note the value of each problem or part of the problem as a percentage of the total assessment. That will give you a guide to the depth of answer expected by the lecturer. A good rule of thumb is 1-2 hours for each percent of the total assessment, though many students have gone faster and obtained very good marks.

5.3.3 Ring If You Have A Question

Many assignments will have some bits of information which may not be pertinent to the solving of the problem. This follows the real life situation where a variety of facts are known and the engineer or scientist or waste manager or decision maker must separate out the irrelevant ones and use the meaningful ones to solve the problem.

Some assignments may lack some critical piece or pieces of information which may seem vital for completion of the assignment. In these cases an assumption may be required to fill in some empty places. This mirrors the real life situation of a person who must have an answer by a deadline too short to allow all the facts to be obtained; or where the cost of obtaining the full facts is outside budgetary constraints. If in doubt, ring the lecturer.

As a corollary to the previous point, it is a good idea to employ a kind of sensitivity analysis to the problem to help determine whether an assumption should be made. For example if you need a number which will help you get 60% of the answer then it may be worth going to the library or ringing an expert. If a piece of information will help you answer only 1% of a problem then it is best to make an assumption and get on to the important parts of the problem.

5.3.4 Answer the Questions Asked

This is the main reason for students failing assignments, exams or parts of assignments. Rarely is it that they don't understand the material; it is usually because they have written several pages on a vaguely related subject, but not answered the specific question. Again, please ring the lecturer if you are unclear on the meaning of any question.

5.3.5 Show All Calculations

When the answer to a complex numerical problem is wrong, a fair mark can still be achieved if the lecturer can see that you understand how the problem should be solved. If your calculations are not shown and you get the answer wrong, there is nothing there to show that you know how to do the problem, so very little credit can be given for your work. However, incorrect results for simple numerical calculations in assignments will be severely penalised, particularly when the resulting numerical answer or units are nonsense.

5.3.6 Use Clear Concise English

It is very rarely true that the longest answer is the best answer. Collect your thoughts and present them in good concise English. Plan an outline of your answer before writing up in detail.

A good answer should be clear to someone with only a basic background in the field. It should go straight to the point, be well written and easy to understand.

5.3.7 Be Clever and Creative

Your answers should not all be dredged out of the course notes or the textbooks. Some are already in your head. Use all your experience and imagination to solve the problem. To get the highest marks possible, you must show something extra, such as getting extra information or adding a creative spark to the answer. The assignments can be passed and credits and possibly distinctions obtained by just using the data sent to you, but a high distinction requires something more.

5.3.8 Don't Omit the Obvious

Often students who have a good background in a certain field tend to give complex answers to relevant assignment topics. Although some questions may seem trivial, it is worth a few initial sentences to cover the "obvious" aspects of any problem no matter how extensive your knowledge. Even if you don't have any special background, you may feel that the answer is obvious. Remember, if in doubt, ring the lecturer.

5.3.9 Use and Cite References

A much more sympathetic view will be given of statements that are properly referenced (including citing the course notes), than of statements or assumptions that seem to have been pulled from the sky. Make sure that your references are sufficiently complete for them to be found directly in an appropriate library, and use a

consistent system for referencing journal papers, books, chapters in books, theses and reports, preferably the Harvard system as used in the Course Notes. 10% of report assignment marks are usually allocated to presentation - you will lose most of these marks if you do not fully reference your sources.

Plagiarism is academic misconduct. Please refer to the Student Guide for details of disciplinary action in cases of plagiarism.

5.3.10 Get Your Assignments In On Time

Assignments submitted on time will usually be sent with comments in two weeks, but no promises can be made about late assignments. Most lecturers prefer to mark all the assignments at the same time for economy of effort and to be as fair as possible. Late assignments may get left until all the on-time assignments have been marked.