PHIL3910 - Technology and Human Values
Course Outline

Course Co-ordinator: Dr Yin Gao
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Consultation hours: Monday 3:00 - 5:00pm
Semester: Semester 1 - 2006
Unit Weighting: 10
Teaching Methods: Lecture

Course Overview

Brief Course Description
Teaches the nature and systematic analysis of normative design decisions, in particular in engineering, in the context of a systems dynamic approach to modelling. It sets that study in a larger framework of analysis of Western commercial, political and social systems and their functioning, and of the professional ethics that flow from that.

Contact Hours
Lecture for 2 Hours per Week for the Full Term
Tutorial for 2 Hours per Fortnight for 6 Weeks
One tutorial for organisation in week two (for all students) followed by five two-hour fortnightly tutorials, PLUS a Quiz in week 7.

For particular dates and times refer to course guide available at first Lecture.

Course Outline Issued and Correct as at: Week 1 Semester 1 2006
CTS Download Date: 17.2.06
Learning Materials/Texts

Course Objectives
(1) to give students a knowledge of the nature and basic principles of normative design decisions, in particular in engineering, in the context of a systems dynamic approach to modelling.

(2) to impart to students the skills required for them to be able to engage in critical assessment of design practice and in design problem solving that meets larger societal expectations as well as those of good engineering design.

(3) to enable students to effectively communicate their understanding and to interact effectively so as to problem solve with diverse communal groups.

(4) to provide students a critical appreciation of the larger framework of Western commercial, political and social systems within which engineering practice operates, and of the professional ethics that flow from that.

Course Content
The course covers the nature of norms and their application, basic principles of dynamic systems and of the choice of systems models and analyses and their normative dimensions (e.g. robustness criteria), analyses of major societal systems and their normative character and impacts, including on engineering design, analyses of important normative design assessment tools (such as impact assessment, cost-benefit-risk analysis), and an introduction to principled professional ethics.

Assessment Items

<table>
<thead>
<tr>
<th>Assessment Items</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Essays / Written Assignments</td>
<td>Tutorial Assignment, (750 words), 10%, is to help students start on normative, not just factual, analysis of engineering design problems, and will also sharpen critical and communication skills.</td>
</tr>
<tr>
<td>Essays / Written Assignments</td>
<td>Group Project (3,000-4,000 words), 20%, provides opportunity to develop and extended normative design analysis and consists of 4-6 students getting together to produce a coherent account on one topic. This will demonstrate the application of both knowledge and skills, and provides experience in performing multi-tasking group work.</td>
</tr>
<tr>
<td>Examination: Formal</td>
<td>Examination, (2 hours), 50%, evaluates the depth and systematicity of student understanding of basic principles and how to apply them.</td>
</tr>
<tr>
<td>Group/tutorial participation and contribution</td>
<td>Tutorial Participation, 10%, allows assessment and feedback on developing knowledge of subject and on developing critical capacity to analyse and argue issues in the subject. Attendance will be taken and tutors will assess contribution to discussion.</td>
</tr>
<tr>
<td>Quiz - Tutorial</td>
<td>Tutorial Quiz, (20 minutes), 10%, assesses students’ understanding of several key concepts introduced in the first five weeks of the course.</td>
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Assumed Knowledge
60 units of successfully completed subjects
Callaghan Campus Timetable
PHIL3910
TECHNOLOGY AND HUMAN VALUES I
With PHIL6910. Enquiries: School of Humanities and Social Science
Semester 1 - 2006
Lecture Wednesday 18:00 - 20:00 [EF02] With PHIL6910
or Thursday 12:00 - 14:00 [SRLT2]
and Tutorial Wednesday 11:00 - 13:00 [ES209] Weeks 3, 5, 9, 11
or Wednesday 11:00 - 13:00 [ES209] & 13 only.
or Wednesday 14:00 - 16:00 [EF20] Weeks 3, 5, 9,
or Wednesday 14:00 - 16:00 [EF20] 11 & 13 only.
or Monday 18:00 - 20:00 [EF02] Weeks 4, 6, 8, 10
or Monday 18:00 - 20:00 [EF02] & 12 only.
and Tutorial Wednesday 14:00 - 16:00 [SRLT1] Wk 2-Intro &
or Wednesday 11:00 - 13:00 [ES305] Wk 7-Quiz only
or Monday 18:00 - 20:00 [EF02] Wk 2-Intro &
or Monday 18:00 - 20:00 [EF02] Wk 7-Quiz only
& 12 ONLY.

Plagiarism

University policy prohibits students plagiarising any material under any circumstances. A student plagiarises if he or she presents the thoughts or works of another as one’s own. Without limiting the generality of this definition, it may include:

- copying or paraphrasing material from any source without due acknowledgment;
- using another’s ideas without due acknowledgment;
- working with others without permission and presenting the resulting work as though it was completed independently.

Plagiarism is not only related to written works, but also to material such as data, images, music, formulae, websites and computer programs.

Aiding another student to plagiarise is also a violation of the Plagiarism Policy and may invoke a penalty.

For further information on the University policy on plagiarism, please refer to the Policy on Student Academic Integrity at the following link -


The University has established a software plagiarism detection system called Turnitin. When you submit assessment items please be aware that for the purpose of assessing any assessment item the University may -
- Reproduce this assessment item and provide a copy to another member of the University; and/or
- Communicate a copy of this assessment item to a plagiarism checking service (which may then retain a copy of the item on its database for the purpose of future plagiarism checking).
- Submit the assessment item to other forms of plagiarism checking

**Written Assessment Items**

Students may be required to provide written assessment items in electronic form as well as hard copy.

**Extension of Time for Assessment Items, Deferred Assessment and Special Consideration for Assessment Items or Formal Written Examinations**

Students are required to submit assessment items by the due date, as advised in the Course Outline, unless the Course Coordinator approves an extension of time for submission of the item. University policy is that an assessment item submitted after the due date, without an approved extension, will be penalised.

Any student:

1. who is applying for an extension of time for submission of an assessment item on the basis of medical, compassionate, hardship/trauma or unavoidable commitment: or

2. whose attendance at or performance in an assessment item or formal written examination has been or will be affected by medical, compassionate, hardship/trauma or unavoidable commitment;

must report the circumstances, with supporting documentation, to the appropriate officer on the prescribed form.

Please go to the Policy and the on-line form for further information, particularly for information on the options available to you, at:


**Changing your Enrolment**

**PSB students should refer to PSB for changes to enrolment. Note that penalties for PSB students differ from that of on-campus students. In addition, online enrolment is not applicable for PSB students at this moment.**

The last dates to withdraw without financial or academic penalty (called the HECS Census Dates) are:

For semester 1 courses: 31 March 2006
For semester 2 courses: 31 August 2006
For Trimester 1 courses: 17 February 2006
For Trimester 2 courses: 9 June 2006

Students may withdraw from a course without academic penalty on or before the last day of semester and prior to the commencement of the formal exam period. Any withdrawal from a course after the last day of semester will result in a fail grade.

Students cannot enrol in a new course after the second week of semester/trimester, except under exceptional circumstances. Any application to add a course after the second week of semester/trimester must be on the appropriate form, and should be discussed with the School Office.

To change your enrolment online, please refer to

http://www.newcastle.edu.au/study/enrolment/changingenrolment.html

Contact Details

Faculty Student Service Offices
The Faculty of Education and Arts
Room: GP1-22 (General Purpose Building)
Phone: 0249 215 314

The Dean of Students
Dr Jennifer Archer
Phone: 492 15806
Fax: 492 17151
resolutionprecinct@newcastle.edu.au

Various services are offered by the University Student Support Unit:

Alteration of this Course Outline

No change to this course outline will be permitted after the end of the second week of the term except in exceptional circumstances and with Head of School approval. Students will be notified in advance of any approved changes to this outline.

Web Address for Rules Governing Undergraduate Academic Awards

Web Address for Rules Governing Postgraduate Academic Awards
STUDENTS WITH A DISABILITY OR CHRONIC ILLNESS

The University is committed to providing a range of support services for students with a disability or chronic illness.

If you have a disability or chronic illness which you feel may impact on your studies, please feel free to discuss your support needs with your lecturer or course coordinator.

Disability Support may also be provided by the Student Support Service (Disability). Students must be registered to receive this type of support. To register please contact the Disability Liaison Officer on 49 21 5766, or via email at: student-disability@newcastle.edu.au

As some forms of support can take a few weeks to implement it is extremely important that you discuss your needs with your lecturer, course coordinator or Student Support Service staff at the beginning of each semester.

For more information related to confidentiality and documentation please visit the Student Support Service (Disability) website at:

www.newcastle.edu.au/services/disability

<table>
<thead>
<tr>
<th>Grading guide</th>
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<tbody>
<tr>
<td>49% or less</td>
</tr>
<tr>
<td>50% to 64%</td>
</tr>
<tr>
<td>65% to 74%</td>
</tr>
<tr>
<td>75% to 84%</td>
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<tr>
<td>85% upwards</td>
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</table>
PHIL 3910
TECHNOLOGY AND HUMAN VALUES

Semester I
2006
10 Units

The Tacoma Narrows Bridge as the eventually catastrophic oscillations are becoming large. Source http://www.enm.bris.ac.uk/research/nonlinear/tacoma/tacoma.html.

PURPOSE

This course is designed to prepare future technical professionals to systematically tackle normative issues arising out of technological decisions. Many design decisions reflect value judgments requiring subtle knowledge of technical processes and social context in order to be successful. Indeed, professional decisions, often unwittingly, can serve to amplify, or suppress, a wide range of values. A complex adaptive systems framework is developed in order to properly articulate and integrate the technical dimensions and the non-technical dimensions, including those which are ethical, spiritual, social, political and economic. A careful consideration of these factors, together with a critical appraisal of various procedures for incorporating them into decision-making, will serve to better the chances of developing appropriate solutions to difficult problems.

COURSE OBJECTIVES

(1) To give students a knowledge of the nature and basic principles of normative design decisions, in particular in engineering, in the context of a systems dynamic approach to modelling.

(2) To impart to students the skills required for them to be able to engage in critical assessment of design practice and in design problem solving that meets larger societal expectations as well as those of good engineering design.

(3) To enable students to effectively communicate their understanding and to interact effectively so as to problem solve with diverse communal groups.

(4) To provide students a critical appreciation of the larger framework of Western commercial, political and social systems within which engineering practice operates, and of the professional ethics that flow from that.
REQUIRED TEXTS


Availability: The Notes are available from the NUSA Printer. They are also available through the Auchmuty Library Short Loans online, in pdf file format. You may copy them as you need, but note that they are specially prepared notes and should be used only for your personal study in this course and not be used for any other purpose. Factor Four: chapters 1 to 3 are available through the Auchmuty Library Short Loans online, (chapter 1 in Week 3, chapter 2 in Week 4, and chapter 3 in Week 5)

SUPPLEMENTARY READING

In addition to the required texts, supplementary recommended reading is provided on short loans for each segment of the course. Most are available via the Internet at Short Loans Online (http://library.newcastle.edu.au/press SHORT LOANS) for each segment of the course. The correspondences between readings and topics are listed on the syllabus below. Whilst you are not required to read this material, many students will find it helpful to clarify points made in lectures, as well as for the preparation of assignments and exams. Full references follow:


**Written Assignment and Submission Details**

Students are required to submit assessment items by the due date. Late assignments will be subject to the penalties described below.

**Hard copy submission:**

- **Type your assignments:** All work must be typewritten in 11 or 12 point black font. Leave a wide margin for marker’s comments, use 1.5 or double spacing, and include page numbers.

- **Word length:** The word limit of all assessment items should be strictly followed – 10% above or below is acceptable, otherwise penalties may apply.

- **Proof read your work** because spelling, grammatical and referencing mistakes will be penalised.

- **Staple the pages** of your assignment together (do not use pins or paper clips).

- **University coversheet:** All assignments must be submitted with the University coversheet:
  

- **Assignments are to be deposited in the relevant discipline assignment box:**
  
  - Callaghan students: the assignment box outside Room MC127, McMullin Building

- **Do not fax or email assignments:** Only hard copies of assignments will be considered for assessment. Inability to physically submit a hard copy of an assignment by the deadline due to other commitments or distance from campus is an unacceptable excuse. Assignments mailed to Schools are accepted from the date posted.

- **Keep a copy of all assignments:** All assignments are date-stamped upon receipt. However, it is the student’s responsibility to produce a copy of their
work if the assignment goes astray after submission. Students are advised to keep updated back-ups in hard copy and on disk.

**TUTORIAL WORKSHOPS**

Periodically during class time we will break into small groups for tutorial workshops. At the first meeting tutorial procedures and assignments will be explained, and we will organise the work groups of 4-6 students. These workgroups will form the basis for informal tutorial activities, as well as for the group assignment.

**TUTORIAL ASSESSMENT**

Assessment in tutorials will be based on three components:

1. **Participation.** *Tutorials participation is designed to involve students in discussing and applying the course concepts and principles to obtain an effective working grasp of them.* Prepared and thoughtful participation in tutorial discussions will help you succeed in this course. To encourage this, 10% of your final grade is based on tutorial participation. Attendance will be recorded; absences from workshop sessions will be excused only in cases of legitimate documented difficulties (illness, death, e.g.). Satisfactory participation means contributing regularly to discussion of the course material, to at least pass standard, as well as contribution to any informal written tutorial activities. A composite grade will be assigned to written and oral contributions.

2. **Quiz.** *The quiz is designed to test the students' grasp of the foundational concepts of the course.* The quiz, worth 10%, will last 20 minutes. You will be asked to explain several key concepts introduced in the first six weeks of the course. Each question will be of equal weight and common mistakes will be addressed in a lecture following the quiz.

3. **Assignment.** *The tutorial assignment is designed to help students start on normative, and not just factual, analysis of engineering design problems.* The assignment, worth 10% of your final grade, will require you to follow, in newspapers and periodicals, some current issue or event concerning the content of this course, e.g. ozone depletion, technological aid to developing nations, photovoltaics, NewWater, etc. From time to time articles that we have seen over the course of the week will be pointed out at the beginning of each lecture. You should read several articles on your chosen topic (at least one per week) and keep a log (or, better yet, electronic copies of clippings). It would be best to keep abreast of several issues at the outset, until you get an idea that will end up with sustained coverage. You will submit by email (MS WORD or RTF format) on the due date a 750-word summary and analysis of the normative elements (i.e. those involving value judgments) of your chosen issue, making explicit reference to at least two articles, along with your commentary and clippings. These will be assessed, receiving a mark out of ten (n/10) using the following rationale:

   - No assignment submitted: 0
   - This is not a sincere attempt at the assignment: 2/10

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School of Humanities and Social Science
This provides an inarticulate summary with no attempt at normative analysis: 3/10

This is a good, well-organised summary but with little or no sensitivity to normative issues: 4-5/10

There is an adequate summary with some attempt to identify norms: 5-6/10

Very good, well organised discussion with some attempt to identify norms: 6-7/10

Good identification of norms; some good analytical points: 7-8/10

Particularly well-organised, good normative analysis: 8-9/10

Exemplary discussion >9/10

GROUP PROJECT.

The group project is designed to provide an opportunity to develop an extended normative design analysis, demonstrating the application of both knowledge and skills, and provides experience in performing multi-tasking group work.

The objective of the group project is to provide a normative discussion of technological design--with specific reference to the technologies relevant to one of the following seventeen sets of primary sources.

1. Productivity Commission F & M disease study (Productivity Commission 2002)  


3. Ipswich Bypass Queensland DMR (DMR 2002)  
   http://www.mainroads.qld.gov.au/MRWEB/Prod/Content.nsf/2911b5cc11cfec994a2569e60005f0b3/fc342d9a08b8c0594a256b1e00676c2!OpenDocument

4. Gorgon Gas Project, Texaco/Chevron WA (Chevron Texaco Australia Pty Ltd 2003)  


6. Australian Energy Policy  
   Australian Government White Paper on Energy Policy  

World Wide Fund Clean Energy Future  
http://wwf.org.au/ourwork/climatechange/cleanenergyfuture
7. Millenium Ecosystem Assessment Report

8. NSW Comprehensive Regional Assessment for Regional Forest Agreements

9. Urban Planning


Weizsäcker, E. V, A. B. Lovins and L. H. Lovins, Factor Four: doubling wealth, halving resources use. Chapter 1, or 2, or 3.

House of Representatives Standing Committee on Environment and Heritage, Sustainable Cities: August 2005

10. Sustainable Architecture

Guy, S. and S. A. Moore, Sustainable architecture: cultures and natures in Europe and North America. Chapter 2 and 3,

Weizsäcker, E. V, A. B. Lovins and L. H. Lovins, Factor Four: doubling wealth, halving resources use. Chapter 1, 2, or 3.

House of Representatives Standing Committee on Environment and Heritage, Sustainable Cities: August 2005

11. Urban Development (1)


Weizsäcker, E. V, A. B. Lovins and L. H. Lovins, Factor Four: doubling wealth, halving resources use. Chapter 1, or 2, or 3.

House of Representatives Standing Committee on Environment and Heritage, Sustainable Cities: August 2005

12. Urban Development (2)


Weizsäcker, E. V, A. B. Lovins and L. H. Lovins, Factor Four: doubling wealth, halving resources use. Chapter 1, or 2, or 3.

House of Representatives Standing Committee on Environment and Heritage, Sustainable Cities: August 2005

13. Community Planning (1)

Weizsäcker, E. V, A. B. Lovins and L. H. Lovins, Factor Four: doubling wealth, halving resources use. Chapter 1, or 2, or 3.


14. Community Planning (2)


Weizsäcker, E. V, A. B. Lovins and L. H. Lovins, Factor Four: doubling wealth, halving resources use. Chapter 1, or 2, or 3.


15. Urban Design (1)

Cuthbert, A. R. Designing Cities: critical readings in urban design. Part VI.

Weizsäcker, E. V, A. B. Lovins and L. H. Lovins, Factor Four: doubling wealth, halving resources use. Chapter 1, or 2, or 3.


16. Urban Design (2)

Cuthbert, A. R. Designing Cities: critical readings in urban design. Part VII.

Weizsäcker, E. V, A. B. Lovins and L. H. Lovins, Factor Four: doubling wealth, halving resources use. Chapter 1, or 2, or 3.


17. Gender and Urban Design


In general, in your Group Project you should consider the following questions:
• What values underlie technological design generally, and in the case of your primary source material in particular?

• What moral, social, political, economic and environmental issues must be decided before a reasoned judgment of acceptability can be made?

• How should environmental quality, economic value, and social quality of life be taken into account in the design of technological systems?

• How should conflicts among such considerations be dealt with?

• Do the authors of your primary source material provide an effective framework for making design decisions?

• What criticisms can you make of the primary source material, particularly for improving its decision framework?

Your primary reference source(s) will typically provide either an analysis of a particular project, or proposals for improving technologies, and may include a normative rationale for those proposals. The overall value basis is often implicit in the introductory or executive summary sections. If so, this should be examined in detail.

Illustrating your points with detailed examples can be useful. You should work through the values, both explicit and implicit, in a few particular sections (for example, a select set of technologies, or design recommendations) of your source material in detail. However, do not spend a major portion of your project discussing technical performance criteria alone. Identify how technical performance criteria relate to wider moral, social, political, economic or environmental values. Where relevant, you should discuss any assumptions implicit in the primary source material about how the economic market works, and about economic policies that can be used to promote better technology. Where relevant, you should discuss any assumptions implicit in the primary source material about how the political system or society and culture operates, and about social policies that can be used to promote better outcomes. Such strategies, where suggested, need to be examined in detail, again, for the design/value choices they require.

Two types of criticisms are possible: On the one hand there may be something wrong with the fundamental normative analysis. For instance, the authors of the source material may embrace contradictory values or you may disagree with some (or even all) of the values they express. In such cases the value judgments need to be addressed directly; most important are the reasons you provide for your criticism. On the other hand, the value analysis may be fine, but you may still think that there is something wrong with the strategies proposed to bring about the advocated aims. In this case, there are two types of issue. Perhaps there is a factual mistake, e.g. perhaps the economic market, technology users, or society does not operate as the authors say they do, or perhaps there is a mistaken normative assumption in the primary source analysis. Recall the discussion of “Systematically Misleading Problems” in the Course Notes. These can be the result of lapses in either factual or normative analysis. Does the primary source material avoid these types of error? In any case, clearly point out what is at issue, and your counter-proposal. It is not enough to point
out the authors' mistakes; you should provide reasons why they are mistakes, and what ought to be done about them.

Be sure to relate the proposals in the primary source material to the systems design and values referred to in *Technology and Human Values*. In fact, one way to approach this assignment is to consider it as a request to compare/contrast the approach in the primary source material takes to evaluating technological designs with the approach taken in the Course Notes. For instance, you might consider the following types of issue: In relation to the complex systems perspective of the Course Notes, what aspects are regarded as necessary for an adequate analysis of technological design? Pay particular attention to values and norms, and wider system concerns--social, economic, environmental, etc. How do these relate? The source material will offer a particular perspective on the analysis of technological design. What is this perspective and what are the underlying value judgments and norms implicit in this perspective? How does this compare to the complex systems perspective? Critically evaluate.

A good way to illustrate your contentions is to identify a particular values basis for evaluating a particular technology (broadly conceived), and to compare that perspective with the source material perspective by grounding the discussion in a specific example. How does the source material analysis differ from the alternative perspective that your group has selected? (Your chosen issue is not going to be treated specifically by every section in the source material - and possibly not at all in this course - this is where imaginative application of the analysis to your chosen issue is required if you feel it would be appropriate. For instance, if you were to choose transport, you would need to ask what your source material would have to say about car transport, and what the notes would say about appropriate transport design.)

A place to begin might be an analysis of the source material identifying the key value judgments and normative issues raised there. You might comment briefly on how these are to be evaluated, providing guidelines and/or principles for making such judgments. It is important to focus on the value judgments involved, rather than matters of fact to be disputed. Unsupported assumptions should be identified, as should any further questions that must be decided before a judgment can be reached. But your analysis should include further reflection and/or reading beyond the source material sufficient to provide your own independent assessment of the issues. You should give reasons for the assessment you make. You should state clearly how the proposals in the source material can be improved (or, if irredeemable, what should replace them)? Finally the project should be refined into a coherent report.

**Report Structural Requirements**

The following provides some minimum specifications for the report structure. Some of the following requirements are mandatory (indicated by the use of the term “must”) and some are advisory, but highly recommended (indicated by the use of the term “should”). Any report that does not comply to the mandatory structural specifications will be asked to be resubmitted until it does comply.

The 3000-4000-word project should be typed double-spaced on A4 paper.

The report must be divided into sections, separated by clearly labelled section headings. The sections must include an introductory and a concluding section, and no single section (subsection) should be longer than 1000 words.
The introductory section should contain an outline of the rest of the report and it should also include a summary of the main points in each section. Each section should contain at least either (if not both) an introductory or (and) concluding paragraph, that summarises the main point(s) of the section and provides a brief outline of its main arguments.

**Procedure** You will be assigned to tutorial work groups and will select a group leader and co-leader. You will all take equal final responsibility for the group report.

It is suggested that at least **four** group meetings will be required:

1. A few minutes to elect leader and co-leader, and to decide how your group will cooperate. Set a date for meeting 2.
2. A longer meeting to discuss and assign to each member what is to be researched and initial reading.
3. A longer meeting to present, discuss and organise research findings. Agree on points to be made and assign writing tasks.
4. A meeting just prior to the due date. Hear and prepare the final group report in writing. Group leader to take responsibility for presentation of the report on time.

**Beware** While distributing the labour for this assignment by each member taking a separate chapter or other reading, may be a useful strategy as a start, the issues raised are interconnected, and groups should produce an integrated analysis. Therefore, group members should discuss the issues with all members providing input into the final draft. Fragmented and repetitive reports will be downgraded accordingly.

**Penalties for Late Assignments**

Assignments submitted after the due date, without an approved extension of time will be penalised by the **reduction of 5% of the possible maximum mark** for the assessment item for each day or part day that the item is late. Weekends count as one day in determining the penalty. Assessment items submitted **more than ten days** after the due date will be awarded **zero marks**.

**Special Consideration/Extension of Time Applications**

Students wishing to apply for Special Consideration or Extension of Time should obtain the appropriate form from the Student HUBS.

**No Assignment Re-submission**

Students who have failed an assignment are not permitted to revise and resubmit it in this course. However, students are always welcome to contact their Tutor, Lecturer or Course Coordinator to make a consultation time to receive individual feedback on their assignments.

**Remarks**

Students can request to have their work re-marked by the Course Coordinator or Discipline Convenor (or their delegate); three outcomes are possible: the same grade,
a lower grade, or a higher grade being awarded. Students may also appeal against their final result for a course. Please consult the University policy at:


Return of Assignments

Where possible, assignments will be marked within 3 weeks and returned to students in class. At the end of semester, students can collect assignments from the Student HUBS during office hours.

Preferred Referencing Style

In this course, it is recommended that you use the Harvard in-text referencing system (similar to the APA system) for referencing sources of information used in assignments. Inadequate or incorrect reference to the work of others may be viewed as plagiarism and result in reduced marks or failure.

An in-text citation names the author of the source, gives the date of publication, and for a direct quote includes a page number, in parentheses. At the end of the paper, a list of references provides publication information about the source; the list is alphabetised by authors' last names (or by titles for works without authors). Further information on referencing and general study skills can be obtained from:


Online Tutorial Registration:

Students are required to enrol in the Lecture and a specific Tutorial time for this course via the Online Registration system:


Registrations close at the end of week 2 of semester.

PLAGIARISM & DISCIPLINE

The relevant University codes of practice on plagiarism and student discipline can be found at the following two web sites respectively:


EXAMINATION

This examination will comprise 3 essay questions. The exam will cover the basic principles and key data of the course, both textbooks and lectures. You will be able to prepare in advance the first question, which will be provided below. For the second question I have provided below a list of sample questions. Two questions similar to the ones provided on the list will appear on the exam. You will be required
to answer one. The third question will be designed to test your overall understanding and integration of the material, and it appears on no lists. You will be allowed to bring in a page with 40 words of notes (e.g. an outline for question 1) into the exam with you, printed as 8 lines with each line consisting only of 5 well-spaced English words.

Your answers to each of these questions should focus on the principles or issues of value involved. The aim here is to take specific normative principles underlying major technological decisions, to state them clearly, to explore their involvement in technological decisions and to examine their strengths, limitations and controversial aspects or interpretations.

These essays are expected to be cogently argued, well researched and clearly presented. In your answer, you should:

1. Identify the issue(s) to be dealt with
2. Set out cogent factual information (briefly!)
3. Present honestly formed views (i.e. is not directed at telling the recipients what they desires to hear)
4. Argue to a conclusion

To answer Question 1 satisfactorily you will need to do some ADDITIONAL READING - e.g. found from the supplementary readings for the course sections, and/or the Short Loans list. The other questions can be answered adequately from material in lectures, Notes and textbook, but of course evidence of outside reading is always a good thing (see below).

You should identify clearly which question you are addressing by stating both their number and sufficient key words to unambiguously identify them. Students are invited to consult the lecturer and tutors on the structure and content of the essays.

**Question 1**

Discuss the concept of Appropriate Technology. What factors need to be considered to determine whether a technology is appropriate? Work through an example in some detail showing how it is appropriate or inappropriate in a particular context.

**Sample Questions 2:**

- State the concept of first and second law energy efficiencies and comment briefly on typical efficiencies of a modern industrial economy.
- Systematically misleading problems - define the idea and discuss its applicability to engineering design, using at least one example from a public project.
- Discuss the implications of liberalism for society, politics, economics and ethics. Show how liberal ideology implies a free market. What are the conditions for an ideal free economic market? Are they achievable approximately in practice?
• Define positive and negative feedback. Discuss them in terms of stability. What roles do each play in the economy? Place this discussion in a wider (environmental, political, social) systems context, utilising some of the economic/social models discussed in the course (Schumacher's Centre/Hinterland dynamic, demographic transition, etc.).

• Evaluate Cost-Benefit-Risk Analysis critically, setting out its chief strengths and weaknesses. Can it contribute anything worthwhile to project evaluation? What? Why? When? Does it need modifying to do so? What roles ought forecasting and backcasting play in decisions about the costs and benefits of a project?

• Critically evaluate the IEAust code of ethics. Is the code adequate to insure that engineers fulfill their professional responsibilities? If not, how should it be improved?

• Explain how professional ethical responsibilities emerge from the nature of a profession, illustrating your answer from a case study in the engineering profession.

Final note on assessment: It is not necessary to pass any particular assessment item (including the final exam) to pass the course; marks will be computed by totaling achievement on all assessment tasks. However, the lecturer reserves the right to increase a student’s mark where substantial improvement is observed over the course of the semester, especially if exam mark is much higher than prior performance (see REGULATIONS AND GUIDELINES CONCERNING EVALUATION above).

NOTES ON SUCCEEDING IN THIS COURSE

It is considerably more difficult to achieve 90% in this course than it is to reach 55%. Since there are no cut and dry correct answers to the questions we explore here, some students wonder what is expected. Every year students ask me what they can do to excel in this course. Some students mean by this question instead, “How can I do well without working too much or thinking too hard?” The answer to the latter question is that you cannot. However there are clear strategies for success that do require some effort. As I state above this course primarily aims to train you to critically assess factors involved in engineering decision making. Hence memorising and regurgitating lecture and text material is not the key to success. Memorising, and more importantly understanding, key ideas is necessary for success. Nevertheless, what is more important is to be able see when these ideas are applicable to a situation, and to apply them to analysing it.

Thus restating points and examples made in lectures and the texts, organised and in your own terms, shows that you listened, read and understood the material. This sort of work is solid and straightforward, and usually receives about 65%. How to do better?

1. One way to show that you have truly understood the material is to make connections between areas of the texts and lecture that are not explicitly stated in the text.

2. There are many supplementary sources that you can read to aid your understanding. Of course, merely throwing in a few references to suggested
readings is unimpressive; using appropriately the ideas developed in outside sources is impressive.

3. You will notice that the lectures do not simply restate the content of the **Course Notes**. This is intentional: I explain the material in my own terms, developing my own examples. So comparing the **Notes** and lectures is a possibility. Again simply restating what I say is not impressive; however I do expect people to listen to the lectures, and you are responsible for their content. Showing that you understood the lectures by using something stated there to illuminate an issue is a good strategy. Of course, well-argued critique of something in the lectures or **Notes** is always welcome.

4. Probably one of the best ways to show that you have fully appropriated the material is to come up with and work your way through your own examples. It is one thing to repeat a point or example in the text, but to see how a point applies to a novel situation requires understanding.

5. Finally, while we do want to widen your awareness of value in general, this course is not about inculcating you with the “right opinions”. Your values are your own, but the opinions you offer need examination. Offering your own critique, along with your own sound argument to back it up, is a good way to demonstrate understanding of the issue at hand.

This leads to the question of linguistic expression. Some people are self-conscious because they think they “don’t write good”. Fair enough. One way to improve ones writing is practice. Furthermore, keep in mind that good writing does not necessarily mean “flowery expression”. We look for well-structured, clear writing, because it often reflects well-structured, clear thinking. Often bad expression is a result of sloppy thinking. Conversely, one often tries to mask lack of thought through vague expression. So, while form and content of writing are separable, bad form often reflects lack of content. Nevertheless, good form does not necessarily win high marks. For those of you with the “gift for gab” when it comes to written expression, be forewarned: B. S., particularly when it is eloquently expressed, readily shows its true nature.

**Studentmail and Blackboard:** [www.blackboard.newcastle.edu.au/](http://www.blackboard.newcastle.edu.au/)

- This course uses Blackboard and studentmail to contact students, so you are advised to keep your email accounts within the quota to ensure you receive essential messages. To receive an expedited response to queries, post questions on the Blackboard discussion forum if there is one, or if emailing staff directly use the course code in the subject line of your email. Students are advised to check their studentmail and the course Blackboard site on a weekly basis.

**Student Representatives**

We are very interested in your feedback and suggestions for improvement. Student Representatives are the channel of communication between students and the School Board. Contact details of Student Representatives can be found on the School website.

**Student Communication**
Students should discuss any course related matters with their Tutor, Lecturer, or Course Coordinator in the first instance and then the relevant Discipline or Program Convenor. If this proves unsatisfactory, they should then contact the Head of School if required. Contact details can be found on the School website.

**Essential Online Information for Students**

Information on Class and Exam Timetables, Tutorial Online Registration, Learning Support, Campus Maps, Careers information, Counselling, the Health Service and a range of free Student Support Services can be found at:


**Singapore Campus Lecturer:** Dr Thomas Brinsmead  
**Ph:** +61-2-49217247  
**Email:** Thomas.Brinsmead@newcastle.edu.au

### SYLLABUS

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* indicates date for quiz. See Assessment, below, for details.

ASSESSMENT

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