**2021 OENG1118 Sustainable Engineering Practice and Design**

**Assessment Tasks guide**

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# Schedule and due dates

Each topic week, watch the lecture, attempt the activities and practice questions, and develop your project.

All resources are available on Canvas.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Week** | **Monday** | **Tuesday** | **Wednesday** | **Thursday** | **Friday** | **Saturday** | **Sunday** |
| **1: March 1**  Introduction  Sustainable development | Lectorial  2:30-3:20pm |  | Lectorial  9:30-10:20pm |  |  |  |  |
| **2: March 8**  Engineering design for sustainability | ***Labour day*** |  | Assistance  Time TBD |  |  |  |  |
| **3: March 15**  Engineering design for sustainability | Assistance  2:30-3:20pm |  | Assistance  Time TBD |  |  |  |  |
| **4: March 22**  Engineering design for sustainability | Assistance  2:30-3:20pm |  | Assistance  Time TBD |  | 11:30pm: Design Deliverable 15%  (*Week 3-4 skills*) |  |  |
| **5: March 29**  LCA: Goal & Scope | Assistance  2:30-3:20pm |  | Assistance  Time TBD |  |  |  |  |
| **5: April 5**  - | ***Mid -*** | ***semester*** | ***Break*** |  |  |  |  |
| **6: April 12**  LCA: Inventory analysis | Assistance  2:30-3:20pm |  | Assistance  Time TBD |  |  |  |  |
| **7: April 19**  LCA: Impact assessment | Assistance  2:30-3:20pm |  | Assistance  Time TBD |  |  |  | ***ANZAC Day*** |
| **8: April 26**  LCA: Interpretation | Assistance  2:30-3:20pm |  | Assistance  Time TBD |  |  |  | 11:30pm: Test 1 25%  (*Week 5-8 skills*) |
| **9: May 3**  Project evaluation | Assistance  2:30-3:20pm |  | Assistance  Time TBD |  |  |  |  |
| **10: May 10**  Life cycle costing | Assistance  2:30-3:20pm |  | Assistance  Time TBD |  |  |  |  |
| **11: May 17**  Community consultation, Implementation, Societal impacts | Assistance  2:30-3:20pm |  | Assistance  Time TBD |  |  |  |  |
| **12: May 24**  Project assistance | Assistance  2:30-3:20pm |  | Assistance  Time TBD |  |  |  | 11:30pm: Test 2 25%  (*Week 9-11 skills*) |
| **13: May 31**  - |  |  |  |  |  |  | 11:30pm: Complete Deliverable 35%  (*Week 3-11 skills*) |

# Course Learning Outcomes

On successful completion of this course, you should be able to:

1. selectively apply the fundamentals of sustainable engineering practice and design
2. Selectively apply the fundamentals of life cycle sustainability assessments to engineering systems
3. develop and defend a strategy for sustainable engineering practice that accounts for ‘triple bottom line’ considerations.

# Project

Product (or service):

Free choice

To enable your project group to demonstrate the weekly skills, choose a product that is a complicated system. The product should comprise:

* at least 3 major interacting subsystems
* 3-5 different major resource requirements (e.g., steel, concrete, water, electricity, diesel)

Examples of appropriate products:

* Vehicles
* Buildings
* Whitegoods
* Municipal wastewater treatment processes
* Electronic devices

Tasks:

1. Redesign the product for better sustainability performance (Design Deliverable, Complete Deliverable)
2. Assess the sustainability performance of the product (Complete Deliverable)

## Design Deliverable (15%)

Group size: 4-6 students (your project group)

Due date: 11:30pm, Friday, March 26

Submission channel: via *TurnItIn* on *Canvas*>*Assignments*

Deliverable count: 1 report; appendices submitted separately

Deliverable format: report (use the report template on Canvas)

Deliverable size: 2000-2500 words (Executive summary–Conclusion)

Task:

Create a report that demonstrates the application of the Week 3-4 skills to your product’s life cycle. Ensure that the application of each skill is clearly communicated

Feedback: provided electronically

Marks: 15%; not peer assessed

## Design Deliverable rubric

| **Criteria** | **High distinction** | **Distinction** | **Credit** | **Pass** | **Fail** |
| --- | --- | --- | --- | --- | --- |
| Correctness of the application of the theory/skills  10 marks  CLO: 1, 2, 3 | Application of all skills as instructed in the formal learning activities and as requested for private group work.  Extensive justification or evidence of your decisions about, and modifications to, your study. | Application of most skills as instructed in the formal learning activities and as requested for private group work.  Much justification or evidence of your decisions about, and modifications to, your study. | Application of some skills as instructed in the formal learning activities and as requested for private group work.  Some justification or evidence of your decisions about, and modifications to, your study. | Application of few skills as instructed in the formal learning activities and as requested for private group work.  Little justification or evidence of your decisions about, and modifications to, your study. | Application of no skills as instructed in the formal learning activities and as requested for private group work.  No justification or evidence of your decisions about, and modifications to, your study. |
| Extent of the application of the theory/skills  10 marks  CLO: 1, 2, 3 | 6-10 marks: HD extended abstract.  See the grading guide. | 3-5 marks: D relational.  See the grading guide. | 1-2 marks: C multistructural (as instructed and requested).  See the grading guide. | 0 marks: P unistructural.  See the grading guide. | 0 marks: F prestructural.  See the grading guide. |
| Clarity and logic of flow of the communication  5 marks  CLO: 3 | Fully appropriate for the audience.  Detailed, thorough, accurate, and direct communication.  Clear, logical structure.  Contains all components expected in the chosen format. | Mostly appropriate for the audience.  Detailed, thorough, accurate, and direct communication.  Clear, logical structure.  Contains all components expected in the chosen format. | Somewhat appropriate for the audience.  Lacks some detail, accurate, thorough, and direct communication.  Mostly logical structure.  Contains most components expected in the chosen format. | Somewhat appropriate for the audience.  Lacks some detail and scope, somewhat inaccurate, and verbose or unclear communication.  Somewhat logical structure.  Contains some components expected in the chosen format. | Inappropriate for the audience.  Lacks detail and scope, inaccurate, and verbose or unclear communication.  Illogical structure.  Contains few or no components expected in the chosen format. |
| Extent and correctness of the acknowledgement of related work  5 marks  CLO: 3 | 5 marks: 5+ relevant, academic references using [(Australian) Harvard style](https://www.rmit.edu.au/library/study/referencing), as described by the RMIT Library | 4 marks: 4 relevant, academic references using [(Australian) Harvard style](https://www.rmit.edu.au/library/study/referencing), as described by the RMIT Library | 3 marks: 3 relevant, academic references using [(Australian) Harvard style](https://www.rmit.edu.au/library/study/referencing), as described by the RMIT Library | 2 marks: 2 relevant, academic references using [(Australian) Harvard style](https://www.rmit.edu.au/library/study/referencing), as described by the RMIT Library | 1 mark: 1 relevant, academic references using [(Australian) Harvard style](https://www.rmit.edu.au/library/study/referencing), as described by the RMIT Library |

Note that the total mark will be scaled to a portion of 35.

## Complete Deliverable (35%)

Group size: 4-6 students (your project group)

Due date: 11:30pm, Sunday, June 6

Submission channel: via *TurnItIn* on *Canvas*>*Assignments*

Deliverable count: 1 report; appendices submitted separately

Deliverable format: report (use the report template on Canvas)

Deliverable size: 4500-5000 words (Executive summary–Conclusion)

Task:

Create a report that demonstrates the application of the Week 3-11 skills to your product’s life cycle. Ensure that the application of each skill is clearly communicated

Include a table of your responses to all feedback comments on your Design Deliverable

Feedback: provided electronically

Marks: 35%; peer assessed using SparkPLUS

## Complete Deliverable rubric

| **Criteria** | **High distinction** | **Distinction** | **Credit** | **Pass** | **Fail** |
| --- | --- | --- | --- | --- | --- |
| Correctness of the application of the theory/skills  10 marks  CLO: 1, 2, 3 | Application of all skills as instructed in the formal learning activities and as requested for private group work.  Extensive justification or evidence of your decisions about, and modifications to, your study. | Application of most skills as instructed in the formal learning activities and as requested for private group work.  Much justification or evidence of your decisions about, and modifications to, your study. | Application of some skills as instructed in the formal learning activities and as requested for private group work.  Some justification or evidence of your decisions about, and modifications to, your study. | Application of few skills as instructed in the formal learning activities and as requested for private group work.  Little justification or evidence of your decisions about, and modifications to, your study. | Application of no skills as instructed in the formal learning activities and as requested for private group work.  No justification or evidence of your decisions about, and modifications to, your study. |
| Extent of the application of the theory/skills  10 marks  CLO: 1, 2, 3 | 6-10 marks: HD extended abstract.  See the grading guide. | 3-5 marks: D relational.  See the grading guide. | 1-2 marks: C multistructural (as instructed and requested).  See the grading guide. | 0 marks: P unistructural.  See the grading guide. | 0 marks: F prestructural.  See the grading guide. |
| Completeness of responses to feedback comments  5 marks  CLO: 3 | All feedback comments addressed. | Most feedback comments addressed. | Some feedback comments addressed. | Some feedback comments addressed. | Few feedback comments addressed. |
| Clarity and logic of flow of the communication  5 marks  CLO: 3 | Fully appropriate for the audience.  Detailed, thorough, accurate, and direct communication.  Clear, logical structure.  Contains all components expected in the chosen format. | Mostly appropriate for the audience.  Detailed, thorough, accurate, and direct communication.  Clear, logical structure.  Contains all components expected in the chosen format. | Somewhat appropriate for the audience.  Lacks some detail, accurate, thorough, and direct communication.  Mostly logical structure.  Contains most components expected in the chosen format. | Somewhat appropriate for the audience.  Lacks some detail and scope, somewhat inaccurate, and verbose or unclear communication.  Somewhat logical structure.  Contains some components expected in the chosen format. | Inappropriate for the audience.  Lacks detail and scope, inaccurate, and verbose or unclear communication.  Illogical structure.  Contains few or no components expected in the chosen format. |
| Extent and correctness of the acknowledgement of related work  5 marks  CLO: 3 | 5 marks: 10+ relevant, academic references using [(Australian) Harvard style](https://www.rmit.edu.au/library/study/referencing), as described by the RMIT Library | 4 marks: 8-9 relevant, academic references using [(Australian) Harvard style](https://www.rmit.edu.au/library/study/referencing), as described by the RMIT Library | 3 marks: 6-7 relevant, academic references using [(Australian) Harvard style](https://www.rmit.edu.au/library/study/referencing), as described by the RMIT Library | 2 marks: 4-5 relevant, academic references using [(Australian) Harvard style](https://www.rmit.edu.au/library/study/referencing), as described by the RMIT Library | 1 mark: 1-3 relevant, academic references using [(Australian) Harvard style](https://www.rmit.edu.au/library/study/referencing), as described by the RMIT Library |

Note that the total mark will be scaled to a portion of 35.

# Test

Task: Answer the questions within the allocated time

## Test 1 (25%)

Group size: 1 student

Due date: 11:30pm, Sunday, May 2

Deliverable count: 1 test

Deliverable format: online Canvas quiz

Test size: 120 minutes

Test format: Multiple choice questions, long-answer questions, open book, calculators permitted

Task: Answer all test questions, which ask you to demonstrate the Week 5-8 skills

Feedback: score provided on Canvas

Marks: 25%

## Test 2 (25%)

Group size: 1 student

Due date: 11:30pm, Sunday, May 30

Deliverable count: 1 test

Deliverable format: online Canvas quiz

Test size: 120 minutes

Test format: Multiple choice questions, long-answer questions, open book, calculators permitted

Task: Answer all test questions, which ask you to demonstrate the Week 9-11 skills

Feedback: score provided on Canvas

Marks: 25%

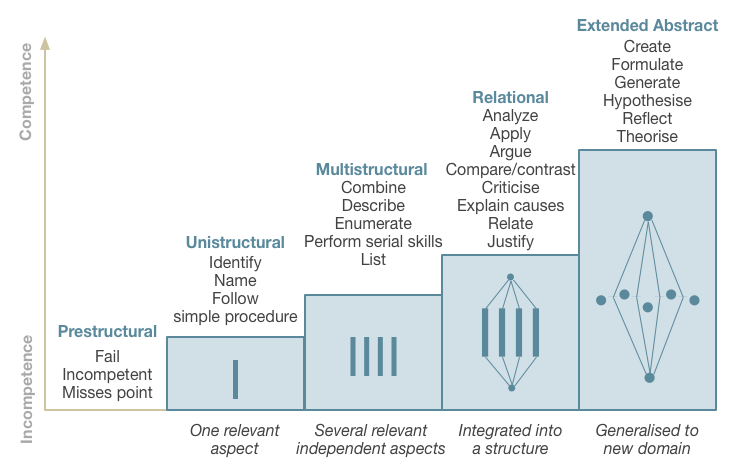
# Grading guide

**Project** deliverables will be graded according to the SOLO taxonomy:

* HD: extended abstract
* D: relational
* C: multistructural (as instructed and requested)
* P: unistructural
* F: prestructural

See the following resources for descriptions of the SOLO taxonomy.

* [Video](http://www.youtube.com/watch?v=uDXXV-mCLPg) (4 min)
* [Text](https://uclexcites.files.wordpress.com/2012/09/solo-taxonomy.jpg) (250 words)



Source: The Australian National University 2014, *Unravelling Complexity*, The Australian National University, Canberra. http://vc-courses.anu.edu.au/uc/home, viewed 4 March 2014.