

A photograph of a city skyline at sunset. The sky is a mix of orange, yellow, and light blue. Several tall, modern skyscrapers are visible, with their windows reflecting the light. In the background, a body of water is visible with some ships. The overall scene is a dense urban environment.

SRT112 Sustainable Construction  
Subject Notes – Deakin University

# **SRT112 Sustainable Construction**

## **Subject Notes**

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### **HOW TO USE THESE NOTES**

These notes were prepared in trimester 1, 2017, and should assist in you achieving high marks in SRT112. They have been carefully prepared and edited.

These notes may assist in your understanding of Assignment format and exam content. That said, it is important to supplement these notes with tutorial content and with the readings and textbook content. The readings and textbook may be examinable.

I strongly recommend in taking up any advice by the tutors and lecturers in SRT112, I have found this particular subject to be assessed and examined very closely to the subjects content and learning objectives. I did find that the lecture content was quite difficult to summarise but found that these summaries very accurately reflected the examination content for trimester 1, 2017.

When it comes to the environmental concepts, it is important to use common sense and to appropriately apply the concepts discussed in the first few weeks of these notes. When talking about construction, it is important to learn the different terminology and structural features of residential construction as listed in these notes.

**Best of luck for SRT112, I hope that you achieve that HD that you are seeking.**

## WEEK 2

1. Consider the issues creating **environmental concerns**.
2. Consider the **impact of the built environment** upon the natural world.
3. Review **types and forms of environmental impact**.
4. Consider the elements of **passive housing design**.
5. Net-zero **housing**. What does 'sustainable' mean? longer life- cycle of improvement, reducing energy consumption, local materials.

### IMPACT OF CLIMATE CHANGE ON BUILDING DESIGN:

- Increasingly extreme weather events. (Storms, floods, bushfires).
- Increased flooding – 25% increase in precipitations (rain) means major flooding cycle periods reduced from 100 years to 17 years. Have we seen the start of this? E.g. construction post Hurricane Katrina.
- Increased wind speeds. A 25% increase in peak gust can cause a 650% increase in building damage.
- Increased temperatures – at least 2.2°C means increase of 5 – 10% in cyclone wind speeds and likelihood of damaging storms. E.g. Marysville redevelopment post 2009 bushfire

### BUILDING INSURANCE

- Insurance is a huge industry. Policies are changing as our climate changes.
- Increasingly volatile weather conditions changing home insurance.
- Increasing standards now required for bushfire-resistance etc.

### DIFFERENT BUILDING METHODS

1. Identify the appropriate climate zone before commencing design and construction. Homes need to be climate appropriate. Designing climate-appropriate architecture reduces the requirement for heating and cooling and creates a more comfortable environment.
2. Daytime living areas with large north facing windows- receive unobstructed winter sun – southern hemisphere, seek to capture as much winter sun as you can.
3. Internal planning- zones to reduce heating and cooling.
4. Windows- appropriate orientation, size and protection from heat loss/gain : an east-west house orientation is best – it allows for the cool afternoon breeze also.
5. Adequate thermal mass (thermally “heavy” building materials.) Slower reaction to outside temp changes.
6. Insulation: walls/floors/ceilings
7. Draft proofing is essential.
8. Cross ventilation (summer cooling):“open the windows”.
9. Landscape design (modifying microclimates.)
10. Deciduous trees allow winter sun. Cool in summer.

### CRADLE-TO-GRAVE

Refers to the life cycle of a building. Buildings should plan to be reused and recycled. Intelligent design can contribute to the extension of the functional life of a building and can allow for its adaptive re-use in the future.