

Curriculum Framework – Gateway (2015-2016)

Green Architecture – Lesson 2 Introduction to Sustainability and Architecture

Desired Results (stage 1)

ESTABLISHED GOALS

It is expected that students will...

- G1 – Demonstrate an ability to identify, formulate, and solve engineering problems.
- G2 – Demonstrate an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
- G3 – Demonstrate an ability to design and conduct experiments, as well as to analyze and interpret data.
- G4 – Demonstrate an ability to apply knowledge of mathematics, science, and engineering.

Transfer

TRANSFER: *Students will be able to independently use their learning to ...*

- T1 – Make informed decisions about environmentally friendly construction and its impact on the economy, human health and society.

Meaning

UNDERSTANDINGS: *Students will understand that ...*

- U1 – Sustainable building solutions are an important part of the world today as our resources are dwindling.
- U2 – Many different processes are used to recycle a variety of materials.
- U3 – Researching the various recycling processes helps one better understand the requirements and the complexity of recycling processes.
- U4 – The air we breathe inside a room can contain contaminants and particles, making it potentially dangerous for humans.
- U5 – The health consequences of poor indoor air quality include coughs, colds, cancer, and even death.
- U6 – Building green refers to methods of fabricating both commercial and residential structures to reduce their impact on human health and the natural environment.

ESSENTIAL QUESTIONS: *Students will keep considering ...*

- Q1 - Where do the products that you recycle end up?
- Q2 - How does the air you breathe every day affect your health?
- Q3 - What can you do to make the environment better for future generations?
- Q4 – How can you remodel a house to make it more “green”?

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| <ul style="list-style-type: none"> • G5 – Demonstrate an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice. • G6 – Pursue the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context. • G7 – Demonstrate an understanding of professional and ethical responsibility. • G8 – Demonstrate an ability to function on multidisciplinary teams. • G9 – Demonstrate an ability to communicate effectively. • G10 – Gain knowledge of contemporary issues. • G11 – Recognize the need for, and develop an ability to engage in life-long learning. | <ul style="list-style-type: none"> • U7 – Architectural designs are created based on the needs of humans and function of the building in relationship to the climate, region, and culture. • U8 – Within a local community there can be a variety of construction materials and architectural styles depending on purpose. • U9 – Architects, engineers, designers, and engineering technologists are in high demand for the development of future technology to meet societal needs and wants. | |
| Acquisition | | |
| <p>KNOWLEDGE: <i>Students will ...</i></p> <ul style="list-style-type: none"> • K1 – Describe the steps of the recycling system. U2, U3 • K2 – List ways to improve indoor air quality. U4, U5 • K3 – Explain the consequences of poor indoor air quality. U4, U5 • K4 – Identify the local home styles in the region and outside of the region. U7, U8 • K5 – Describe different house styles and how they can be built green. U7, U8 | <p>SKILLS: <i>Students will ...</i></p> <ul style="list-style-type: none"> • S1 – Communicate, using a variety of media, the effects that daily living has on the environment. U1, U2, U3, U4, U5 • S2 – Categorize concepts related to building eco-friendly. U6, U7, U8 • S3 – Provide examples of STEM careers and the need for these professionals in our society. U9 | |

| Evidence (stage 2) | | |
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| Activities (A) Projects (P) Problems(B) | Assessment FOR Learning | Assessment OF Learning |
| A 7.2.1 Rebuilding Grennsburg | • Essential Questions | • Conclusion Questions |
| A 7.2.2 Green Vocabulary | • Essential Questions | • Conclusion Questions |
| A 7.2.3 Why Recycle? | • Essential Questions | • Conclusion Questions |
| A 7.2.4 Save the Earth Comic Strip | • Essential Questions | • Conclusion Questions |
| A 7.2.5 Indoor Air Quality | • Essential Questions | • Conclusion Questions |
| A 7.2.6 Building Green | • Essential Questions | • Conclusion Questions |
| A 7.2.7 House Styles | • Essential Questions | • Conclusion Questions |
| A 1.1.5 Engineering Careers | • Essential Questions | • Conclusion Questions |

| Learning Plan (stage 3) | |
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| Activities (A) Projects (P) Problems(B) | Knowledge and Skills |
| A 7.2.1 Rebuilding Grennsburg | S1 |
| A 7.2.2 Green Vocabulary | S1 |
| A 7.2.3 Why Recycle? | K1, S1 |
| A 7.2.4 Save the Earth Comic Strip | K1, S1 |
| A 7.2.5 Indoor Air Quality | K2, K3, S1 |
| A 7.2.6 Building Green | S2 |
| A 7.2.7 House Styles | K4, K5 |
| A 1.1.5 Engineering Careers | S3 |