Curriculum Framework – Gateway (2015-2016)
Green Architecture – Lesson 1 Architectural Basics

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 – Apply principles and practices related to designing and documenting a structure.
- T2 – Apply techniques (measuring), skills (reading an architectural scale), and modern engineering tools (Revit) necessary for engineering practice.

Meaning

UNDERSTANDINGS: *Students will understand that …*

- U1 – The ability to measure accurately is important at school and at home, at work, and when pursuing hobbies.
- U2 – Precision measuring tools are needed for accuracy, but tools must be used correctly to ensure that accurate measurements are taken.
- U3 – Quality of workmanship and accurate measurements with precise instruments are necessary to successfully solve problems.
- U4 – The use of scale is important in design in order to create a functional space that is proportional and aesthetically pleasing to the client.
- U5 – Dimensioning and measuring are required for any architectural project as well as many careers in related fields.

ESSENTIAL QUESTIONS: *Students will keep considering …*

- Q1 - Why is knowledge of area and perimeter important when designing and constructing a building?
- Q2 - Describe a potential consequence if you do not pay attention to accuracy and precision when designing and constructing a building.
- Q3 - How do architects pay attention to both form and function when designing and constructing a building?

Format guided by: Wiggins, G. & McTighe, J. (2011). The understanding by design guide to creating high quality units. Alexandria. VA: ASCD

<table>
<tr>
<td rowspan="4">

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.

</td>
<td>

U6 – Area and perimeter are used to find the square footage of a floor, a wall, or the length and width needed to build the exterior of a home.
U7 – When designing a home, standard rules must be followed in regards to traffic flow, room sizes and relationships, and the layout of kitchens and bathrooms.
U8 – A set of architectural plans includes: plot plan, foundation plan, floor plan, elevations, 3-D views, and construction details.

</td>
<td></td>
</tr>
<tr>
<td colspan="2">Acquisition</td>
</tr>
<tr>
<td>
KNOWLEDGE: Students will …

K1 – Identify the systems required in a residential home, including electrical, plumbing, heating, ventilation, and air conditioning. U7
K2 – Describe the three areas of a house and the rooms that belong to them. U7
K3 – Identify common roof styles. U7
K4 – Describe the working triangle and its purpose. U7
K5 – Identify and use appropriate symbols in a basic floor plan for a residential home. U8

</td>
<td>
SKILLS: Students will …

S1 – Demonstrate the proper use of a standard ruler and an architectural scale. U1, U2, U3, U4, U5
S2 – Use proper notation in regards to dimensioning an architectural drawing. U1, U2, U3, U4, U5
S3 – Calculate area and perimeter of a floor plan given dimensions. U6
S4 – Measure a room and draw it to scale using common symbols. U2, U3, U4, U5, U6, U7
S5 – Read and interpret a blueprint of a floor plan. U7, U8

</td>
</tr>
</table>

Format guided by: Wiggins, G. & McTighe, J. (2011). The understanding by design guide to creating high quality units. Alexandria. VA: ASCD

Evidence *(stage 2)*		
Activities (A) Projects (P) Problems(B)	Assessment FOR Learning	Assessment OF Learning
A.7.1.1 Measuring Practice	• Essential Questions	• Conclusion Questions
A.7.1.2 Architectural Measurement	• Essential Questions	• Conclusion Questions
A.7.1.3 Architectural Dimensioning	• Essential Questions	• Conclusion Questions
A.7.1.4 Measuring Your Classroom	• Essential Questions	• Conclusion Questions
A.7.1.5 Using Autodesk Revit – Creating Your Classroom Tutorial	• Essential Questions	• Conclusion Questions
A.7.1.6 Estimating Flooring Materials	• Essential Questions	• Conclusion Questions
A.7.1.7 Bedroom Floor Plan Homework	• Essential Questions	• Conclusion Questions
A.7.1.8 Fundamentals of Construction	• Essential Questions	• Conclusion Questions
A.7.1.9 Reading a Floor Plan	• Essential Questions	• Conclusion Questions
A.7.1.10 Room Sizes and Relationships Study Guide	• Essential Questions	• Conclusion Questions
P 7.1.11 My Bedroom Using Revit	• Essential Questions	• Conclusion Questions
P 7.1.12 Bedroom Remodeling	• Essential Questions	• Conclusion Questions

Learning Plan *(stage 3)*	
Activities (A) Projects (P) Problems(B)	Knowledge and Skills
A.7.1.1 Measuring Practice	S1, S2
A.7.1.2 Architectural Measurement	S1, S2
A.7.1.3 Architectural Dimensioning	S2, S3
A.7.1.4 Measuring Your Classroom	S2, S3, S4
A.7.1.5 Using Autodesk Revit – Creating Your Classroom Tutorial	S4
A.7.1.6 Estimating Flooring Materials	S3, S4
A.7.1.7 Bedroom Floor Plan Homework	S1, S2, S3, S4
A.7.1.8 Fundamentals of Construction	K1, S5
A.7.1.9 Reading a Floor Plan	K1, S5
A.7.1.10 Room Sizes and Relationships Study Guide	K1, K2, K3, K4, S5
P 7.1.11 My Bedroom Using Revit	K5, S4, S5
P 7.1.12 Bedroom Remodeling	K5, S4, S5

Format guided by: Wiggins, G. & McTighe, J. (2011). The understanding by design guide to creating high quality units. Alexandria. VA: ASCD