Curriculum Framework – Gateway (2017-2018)
Introduction to Gateway Engineering – Lesson A What is Engineering?

<table>
<tr><th colspan="3">Desired Results (stage 1)</th></tr>
<tr><td rowspan="3">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</td><td colspan="2">Transfer</td></tr>
<tr><td colspan="2">TRANSFER: Students will be able to independently use their learning to …

• T1 – Understand the impact of engineering solutions in a global, economic, environmental, and societal context.
• T2 – Function on a multidisciplinary team.</td></tr>
<tr><td colspan="2">Meaning</td></tr>
<tr><td>UNDERSTANDINGS: Students will understand that …

• U1 – An engineering notebook is used to record original ideas or designs and to document the design process related to an invention or innovation.
• U2 – A portfolio is an organized collection of best works.
• U3 – Science is the study of the natural world, while technology is the study of how humans develop new products to meet needs and wants.
• U4 – Teams of people can accomplish more than one individual working alone.
• U5 – Technological change is seen through inventions, innovations, and the evolution of technological artifacts, processes, and systems.
• U6 – Technology can have positive and negative social, cultural, economic, political, and environmental consequences.</td><td>ESSENTIAL QUESTIONS: Students will keep considering …

• Q1 – Why is it important for an engineer to document their work in an engineering notebook?
• Q2 – How are our lives impacted by engineers?
• Q3 – What inventions and innovations do you think are essential to your life?
• Q4 – How does the use of technology affect the way that you live?</td></tr>
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<td rowspan="3">mathematics, science, and engineering.
• 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 colspan="2">• U7 – Engineers, designers, and engineering technologists are needed in high demand for the development of future technology to meet societal needs and wants.</td>
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<td colspan="2">Acquisition</td>
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<td>KNOWLEDGE: Students will …

• K1 – Describe the relationship between science, technology, engineering, and math. U3
• K2 – Identify the differences between invention and innovation. U5
• K3 – Describe impacts that technology has had on society. U6</td>
<td>SKILLS: Students will …

• S1 – Utilize standard procedures to use and maintain an engineering notebook. U1
• S2 – Use guidelines for developing and maintaining an engineering notebook to evaluate and select pieces of one’s own work for inclusion in a portfolio. U2
• S3 – Operate as an effective member of a team to complete an investigation. U4
• S4 – Describe engineering and explain how engineers participate in or contribute to the invention and innovation of products. U5, U7</td>
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Evidence *(stage 2)*		
Activities (A) Projects (P) Problems(B)	Assessment FOR Learning	Assessment OF Learning
A.A.1 Notebook Dividers	• Essential Questions • Gateway Notebook Grading Rubric	• Conclusion Questions • Gateway Notebook Grading Rubric
A.A.2 Introduction to Engineering	• Essential Questions • Activity Questions	• Conclusion Questions
P.A.3 STEM Investigation	• Investigating STEM Grading Rubric • Essential Questions	• Investigating STEM Grading Rubric • Project 1.1.3a Question Guide
A.A.4 What is Technology?	• Essential Questions	• Conclusion Questions and Chart
A.A.5 Engineering Careers	• Essential Questions	• Conclusion Questions

Learning Plan *(stage 3)*	
Activities (A) Projects (P) Problems(B)	Knowledge and Skills
A.A.1 Gateway Notebook Dividers	S1, S2
A.A.2 Introduction to Engineering	K1, K2, S4
P.A.3 STEM Investigation	K1, K2, S3, S4
A.A.4 What is Technology?	K1, K3
A.A.5 Engineering Careers	S4

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