

End-of-Course Assessment Blueprint for Digital Electronics

PLTW has developed new summative End-of-Course (EoC) Assessments that measure both subject-matter knowledge as well as the real-world transportable skills students need to thrive, no matter which college and career paths they choose.

These assessments will measure knowledge and skills according to an Assessment Blueprint that was thoughtfully designed by a panel of industry experts, faculty from higher education institutions, and PLTW Teachers along with PLTW Curriculum and Assessment Team Members. In order to ensure that an assessment aligns to the course standards, the panel created skill clusters and domains to drive the assessment creation process.

- **Skill Clusters** are the overarching statement of what we expect PLTW Digital Electronics students to learn in the course that the EoC Assessment will measure.
- **Domains** are key understandings and long-term takeaways that go beyond factual knowledge and into broader and more conceptual comprehensions.

After identifying the skill clusters and domains, these groups weighted the different aspects of the PLTW Frameworks to determine their recommended degree of representation in the new assessments. With insights from the coalition, PLTW created a design plan for the new EoC Assessment, identifying which knowledge and skills would have value across education and industry sectors and create student currency by measuring skills that matter most in classrooms, college, and careers. The Assessment Blueprint for Digital Electronics is below.

Table 1: Assessment Blueprint – Digital Electronics

Skill Cluster	Domains (D)	% Weight by Skill Cluster
Skill Cluster 1: To demonstrate an engineering mindset, career awareness, appropriate application of mathematical and scientific principles, and common engineering tools, techniques, and technologies; to use an iterative systematic process to creatively solve problems and exhibits personal and professional characteristics and behaviors that are important to a successful career including effective communication	D1 Engineering Mindset D2 Design Process D3 Engineering Tools and Technology D10 Career Awareness D11 Communication	23% - 38%

Skill Cluster 2: To interpret number systems and mathematical relationships of analog circuits and to plan and design circuits to make decisions on the next action based on the current state	D4 Foundations in Mathematics and Science D8 State Machines	10% - 25%
Skill Cluster 3: To demonstrate and apply electronics knowledge related to working safely and the electrical components used within the electronics field	D5 Foundations in Electronics	20% - 35%
Skill Cluster 4: To create, interpret, or modify a logic circuit (combinational, common sequential) and manage inputs and outputs of a microcontroller using programming language based on design requirements	D6 Combinational Logic D7 Sequential Logic D9 Programming Logic	25% - 40%