Alignment of Texas Pre–Admission Content Test (PACT) Computer Science: Grades 8–12 (741) Framework with Texas Essential Knowledge and Skills

This alignment study identifies the Texas Essential Knowledge and Skills that are addressed in whole or in part by each competency of the exam framework. An indication of alignment does not necessarily imply complete congruence of the content of an exam competency with the relevant standard. The information in this document is subject to change if revisions are made to the exam framework. Any changes will fully supersede the information contained in this document.

Competencies	Texas Essential Knowledge and Skills
Field 741: TX PACT: Computer Science: Grades 8–12	**Texas Essential Knowledge and Skills for Computer Science**
<u>Content Domain I</u> **COMPUTATIONAL THINKING AND DATA ANALYSIS**	
001 Understand problem solving and algorithm development.	**Grade 8:** **126.16 c 4** Critical thinking, problem solving, and decision making. The student makes informed decisions by applying critical–thinking and problem–solving skills. **Grades 9–12:** **126.32 c 4; 126.33 c 4; 126.34 c 4** Critical thinking, problem solving, and decision making. The student uses appropriate strategies to analyze problems and design algorithms.
002 Understand characteristics of algorithms.	**Grade 8:** **126.16 c 4** Critical thinking, problem solving, and decision making. The student makes informed decisions by applying critical–thinking and problem–solving skills. **Grades 9–12:** **126.32 c 1; 126.35 c 1** Creativity and innovation. The student develops products and generates new understanding by extending existing knowledge. **126.34 c 4** Critical thinking, problem solving, and decision making. The student uses appropriate strategies to analyze problems and design algorithms.

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003	Understand data analysis, modeling, and simulation.	**Grade 8:** **126.16 c 1** Creativity and innovation. The student uses creative thinking and innovative processes to construct knowledge, generate new ideas, and create products. **126.16 c 3** Research and information fluency. The student acquires, analyzes, and manages content from digital resources. **126.16 c 4** Critical thinking, problem solving, and decision making. The student makes informed decisions by applying critical–thinking and problem–solving skills. **126.16 c 6** Technology operations and concepts. The student demonstrates a thorough understanding of technology concepts, systems, and operations.
		Grades 9–12: **126.33 c 3; 126.36 c 3** Research and information fluency. The student locates, analyzes, processes, and organizes data. **126.34 c 1** Creativity and innovation. The student develops products and generates new understandings by extending existing knowledge. **126.36 c 6** Technology operations and concepts. The student understands technology concepts, systems, and operations as they apply to computer science. **126.41 c 4** Critical thinking, problem solving, and decision making. The student implements problem–solving methods using critical–thinking skills to plan, implement, manage, and evaluate projects; solve problems; and make informed decisions using appropriate digital tools and resources.
Content Domain II **PROGRAMMING CONCEPTS**		
004		**Grade 8:** n/a

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Understand programming concepts and program design and development.	**Grades 9–12:** **126.33 c 2; 126.34 c 2; 126.35 c 2** Communication and collaboration. The student communicates and collaborates with peers to contribute to his or her own learning and the learning of others. **126.33 c 4; 126.34 c 4; 126.39 c 4** Critical thinking, problem solving, and decision making. The student uses appropriate strategies to analyze problems and design algorithms. **126.33 c 6; 126.34 c 6; 126.35 c 6** Technology operations, systems, and concepts. The student understands technology concepts, systems, and operations as they apply to computer science. **126.34 c 1** Creativity and innovation. The student develops products and generates new understandings by extending existing knowledge.
005 Understand characteristics and uses of data types.	**Grade 8:** n/a
	Grades 9–12: **126.32 c 4; 126.34 c 4; 126.35 c 4** Critical thinking, problem solving, and decision making. The student uses appropriate strategies to analyze problems and design algorithms. **126.33 c 6** Technology operations, systems, and concepts. The student understands technology concepts, systems, and operations as they apply to computer science. **126.34 c 3; 126.35 c 3; 126.46 c 3** Research and information fluency. The student locates, analyzes, processes, and organizes data.
006 Understand operators and control structures.	**Grade 8:** n/a

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	Grades 9–12: **126.32 c 4; 126.33 c 4** Critical thinking, problem solving, and decision making. The student uses appropriate strategies to analyze problems and design algorithms. **126.40 c 1** Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding.
007 Understand concepts of object–oriented design and programming.	**Grade 8:** n/a
	Grades 9–12: **126.34 c 4** Critical thinking, problem solving, and decision making. The student uses appropriate strategies to analyze problems and design algorithms.
<u>Content Domain III</u> **COMPUTING SYSTEMS, NETWORKS, AND THE INTERNET**	
008 Understand terminology and concepts related to computing systems.	**Grade 8:** **126.16 c 6** Technology operations and concepts. The student demonstrates a thorough understanding of technology concepts, systems, and operations.

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	Grades 9–12: **126.32 c 4** Critical thinking, problem solving, and decision making. The student uses appropriate strategies to analyze problems and design algorithms. **126.32 c 6; 126.33 c 6; 126.34 c 6; 126.36 c 6; 126.41 c 6; 126.42 c 6; 126.43 c 6; 126.47 c 6; 126.49 c 6; 126.50 c 6** Technology operations and concepts. The student understands technology concepts, systems, and operations as they apply to computer science. **126.39 c 3; 126.50 c 3** Research and information fluency. The student locates, analyzes, processes, and organizes data. **126.47 c 1** Creativity and innovation. The student demonstrates creative thinking, constructs knowledge, and develops innovative products and processes using technology.
009 Understand networks and the Internet.	**Grade 8:** **126.16 c 6** Technology operations and concepts. The student demonstrates a thorough understanding of technology concepts, systems, and operations.
	Grades 9–12: **126.32 c 1; 126.39 c 1** Creativity and innovation. The student develops products and generates new understanding by extending existing knowledge. **126.32 c 5; 126.33 c 5** Digital citizenship. The student explores and understands safety, legal, cultural, and societal issues relating to the use of technology and information. **126.32 c 6; 126.34 c 6; 126.36 c 6; 126.39 c 6; 126.46 c 6; 126.47 c 6** Technology operations and concepts. The student understands technology concepts, systems, and operations as they apply to computer science. **126.34 c 3; 126.36 c 3** Research and information fluency. The student locates, analyzes, processes, and organizes data. **126.35 c 2** Communication and collaboration. The student communicates and collaborates with peers to contribute to his or her own learning and the learning of others.

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Content Domain IV

IMPACTS OF COMPUTING

010	Understand social and global issues related to computer technology.	**Grade 8:** **126.16 c 2** Communication and collaboration. The student collaborates and communicates both locally and globally to reinforce and promote learning. **126.16 c 5** Digital citizenship. The student practices safe, responsible, legal, and ethical behavior while using technology tools and resources. **126.16 c 6** Technology operations and concepts. The student demonstrates a thorough understanding of technology concepts, systems, and operations.
		Grades 9–12: **126.32 c 3; 126.36 c 3; 126.46 c 3; 126.47 c 3** Research and information fluency. The student locates, analyzes, processes, and organizes data. **126.32 c 5; 126.33 c 5; 126.34 c 5; 126.35 c 5; 126.36 c 5; 126.37 c 5; 126.38 c 5; 126.39 c 5; 126.40 c 6; 126.41 c 5; 126.42 c 5; 126.43 c 5; 126.44 c 9; 126.45 c 8; 126.46 c 5; 126.47 c 5; 126.49 c 5** Digital citizenship. The student explores and understands safety, legal, cultural, and societal issues relating to the use of technology and information. **126.45 c 9; 126.46 c 6** Technology operations and concepts. The student develops a basic understanding of the history, current practice, future trends, and procedural protocols in the use of audio and video production. **126.46 c 2; 126.47 c 2** Communication and collaboration. The student uses digital technology to work collaboratively toward his or her own learning and the learning of others.