Pathways in Technology: Computer Programming

Program of Choice
Willowridge High School

The Pathways in Technology Program exists to engage students interested in earning up to 60 dual credit hours toward an Associate in Applied Science degree at no cost to students, obtain industry certification, increase college readiness, provide rigorous instruction and coursework, and provide academic and social support.

Opportunities Include:

- Associate of Applied Science Degree in Computer Programming
- Industry certifications
- Up to 60 hours of college credit to be used toward a bachelor's degree

Requirements of Early College High School:

- Pass the Texas Success Initiative (TSIA) test
- Pass all grade levels
- Participate in sequenced Houston Community College courses

SAMPLE High School Plan: Variations such as involvement in athletics, fine arts and summer courses taken will affect the actual high school plan for each student. Courses that are in **BOLD** are requirements for the Pathways in Technology Program. Students are cohorted in their English, math, science, and social studies courses at the AAC and AP level.

Note: Advanced Academic Course (AAC) were formerly known as Pre-AP

	9th	Summer I	10th	Summer II	11th	Summer III	12th
1	AAC English I	HCC Art Appreciation DC (HS Fine Arts Elective)	AAC English II	Algebra II (for students who have not already taken Algebra II)	HCC English composition 1301/English III	HCC Coop-Education Programming/ Programmer Practicum	English IV
2	AAC World Geography		AP World History		AP US History		Government (1 sem)/ Economics (1 sem)
3	AAC Algebra I or AAC Geometry		AAC Geometry or AAC Algebra II		HCC College Algebra DC (1 sem)/HCC DC Database Theory & Design		Math for Business DC (1 sem)/ HCC DC Advanced Java Programming
4	AAC Biology		AAC Chemistry		Science Elective		Science Elective
5	Language I or Required/Free Elective		Language II or Required/Free Elective		Required or Free Elective		Required or Free Elective
6	AVID I (1 sem)/ Learning Frameworks DC (1 sem)		AVID II		AVID III		AVID IV
7	Required or Free Elective		HCC Business Computer Applications DC (1 sem)/ HCC Psychology DC (1 sem)		HCC DC Computer Virtualization (1 sem)/ HCC DC Program Fundamentals I (1 sem)		HCC Program Fundamentals II DC (1 sem)/ HCC Program Fundamentals III DC (1 sem)
8	Fundamentals of Computer Science or Computer Science AAC		HCC Intro to Humanities DC (1sem)/ HCC Personal Finance (1 sem)		Required or Free Elective		HCC Intermediate Web programming DC (1 sem)/ HCC Advanced Web Programming DC (1 sem)

For more information, please visit www.fortbendisd.com/p-tech.

9th	10th	11th	12th
	ITSC 1307 - UNIX Operating System I (Fall) Course Code: CST1PA ITMT 1358 - Windows Client Operating System (Spring) Course Code: CST1PB	ITNW 1425 - Fundamentals of Networking Technologies (Fall) Course Code: CST2P ITSY 1342 - Information Technology Security (Spring) Course Code: CST3PA	ITSY 2330 - Intrusion Detection Capstone (Fall) Course Code: CST4PA

P-Tech at Willowridge High School Specialized Courses

Computer Programming

EDUC 1300: Learning Framework

Course Number: LP111
Offered In: 9–10
Credits: .5
Level: Dual Credit
Prerequisites: Take the TSIA test
Description: This course covers skills needed for a successful transition to a college level course by learning different models in learning strategies, strategic learning, cognition, and motivation.

Business Computer Applications

BCIS 1305: Business Computer Applications

Course Number: CBU03P
Offered In: 9-12
Credits: .5
Level: Dual Credit
Prerequisites: Pass the TSI
Description: This course is an introduction to business applications with a focus on Microsoft programs.

Database Theory and Design-Dual Credit

ITSE 1346: Database Theory and Design

Offered In: 9–10
Credits: .5
Level: Dual Credit
Prerequisites: Pass the TSI
Description: This course is an introduction to database design and using analysis of data requirements and organizations tables.

Sociology — Dual Credit

SOCI 1301: Introduction to Sociology

Course Number: SS523
Offered In: 11- 12
Credits: .5
Level: Dual Credit
Description: See page 81 of the course guide for a description.

Psychology — Dual Credit

PSYC 2301: General Psychology

Course Number: SS513
Offered In: 11–12
Credits: .5
Level: Dual Credit
Prerequisites: Pass the reading and writing portion of the TSI
Description: See page 81 of the course guide for a description.

English IV Semester 1 — Dual Credit

ENGL 1301: English Composition

Course Number: EL461D
Offered In: 10–12
Credits .5
Level: Dual Credit
Prerequisites: Pass the reading and writing portion of the TSI and be enrolled in the P-TECH program at WHS.

Art I— Dual Credit

ART 1301: Art Appreciation

Course Number: FAO13P
Offered In: 12
Credits: 1
Level: Dual Credit
Prerequisites: Pass the reading and writing portion of the TSI and be enrolled in the P-TECH program at WHS.
Description: A general introduction to the visual arts designed to create an appreciation of the vocabulary, media, techniques, and purposes of the creative process. Students will critically interpret and evaluate works of art within formal, cultural, and historical contexts. This introduction to the visual arts is a global investigation of artistic styles, methods of artistic production and media. Various works will be analyzed and defined in relation to the formal elements and the principles of design. Universal themes are studied within their historical, political, economic, theological, sociological, conceptual, and ethnic contexts. Students will also develop critical thinking and observational skills through the creation of hands-on art projects. This course satisfies the creative arts or component area option of the HCC core.

Humanities First Time Taken— Dual Credit

HUMA 1301: Humanities

Course Number: EL413P
Offered In: 10–12
Credits: .5
Level: Dual Credit
Prerequisites Pass the reading and writing portion of the TSI and be enrolled in the P-TECH program at WHS.
Description: An interdisciplinary survey of cultures focusing on the philosophical and aesthetic factors in human values with an emphasis on the historical development of the individual and society and the need to create.

Computer Science A — Dual Credit

COSC 1436: Program Fundamentals I

Course Number: CST2PA
Offered In: 11–12
Credits: .5
Level: Dual Credit
Prerequisites Pass all portions of the TSI and be enrolled in the P-TECH program at WHS.
Description: Introduces the fundamental concepts of structured programming and provides a comprehensive introduction to programming for computer science and technology majors. Topics include software development methodology, data types, control structures, functions, arrays, and the mechanics of running, testing, and debugging. This course assumes computer literacy.

Computer Science B — Dual Credit

COSC 1437: Program Fundamentals II

Course Number: CST2PB
Offered In: 11–12
Credits: .5
Level: Dual Credit
Prerequisites Pass all portions of the TSI and be enrolled in the P-TECH program at WHS.
Description: This course focuses on the object-oriented programming paradigm, emphasizing the definition and use of classes along with fundamentals of object-oriented design. The course includes basic analysis of algorithms, searching and sorting techniques, and an introduction to software engineering processes. Students will apply techniques for testing and debugging software.

Touch System Data — Dual Credit

ISTE 1346: Database Theory and Design

Course Number: CBU02P
Offered In: 11–12
Credits: .5
Level: Dual Credit
Prerequisite: Pass all portions of the TSI and be enrolled in the P-TECH program at WHS.
Description: Introduction to the analysis and utilization of data requirements and organization intro normalized tables using the four normal forms of database design.

Independent Study in Evolving/Emerging Technologies First Time Taken A — Dual Credit

ITNW 1313: Computer Virtualization

Course Number: CST4PA
Offered In: 11–12
Credits: .5
Level: Dual Credit
Prerequisite: Pass all portions of the TSI and be enrolled in the P-TECH program at WHS.
Description: Implement and support virtualization of clients of servers in a networked computing environment. This course explores installation, configuration, and management of computer virtualization workstation and servers.

Independent Study in Evolving/Emerging Technologies First Time Taken B — Dual Credit

COSC 2436: Program Fundamentals III with JAVA

Course Number: CST4PB
Offered In: 12
Credits: .5
Level: Dual Credit
Prerequisite: Pass all portions of the TSI and be enrolled in the P-TECH program at WHS.
Description: Further applications of programming techniques, introducing the fundamental concepts of data structures and algorithms. Topics include recursion, fundamental data structures (including stacks, queues, linked lists, hash tables, trees, and graphs), and algorithmic analysis.

Cybersecurity Certification Courses

ITSC 1307 - UNIX Operating System I

Course Number: CST1PA
Offered In: 10
Credits: .5
Level: Certification
Description: A study of the UNIX operating system including multi-user concepts, terminal emulation, use of system editor, basic UNIX commands, and writing script files. Topics include introductory systems management concepts.

ITMT 1358 - Windows Client Operating System

Course Number: CST1PB
Offered In: 10
Credits: .5
Level: Certification
Description: A study of Windows operating system; installation, configuration, and troubleshooting; file management; users accounts and permissions; security features; network connectivity; setup of external devices; optimization and customization; and deployment of application, with hand-on experience.

ITNW 1425 - Fundamentals of Networking Technologies

Course Number: CST2P
Offered In: 11
Credits: 1
Level: Certification
Description: Instruction in networking technologies and their implementation. Topics include the OSI reference model, network protocols, transmission media, and networking hardware and software.

ITSY 1342 - Information Technology Security

Course Number: CST3PA
Offered In: 11
Credits: .5
Level: Certification
Description: Instruction in security for network hardware, software, and data, including physical security; backup procedures; relevant tools; encryption; and protection from viruses.

ITSY 2330 - Intrusion Detection Capstone

Course Number: CST4PA
Offered In: 12
Credits: .5
Level: Certification
Description: Computer information systems security monitoring, intrusion detection, and crisis management. Includes alarm management, signature configuration, sensor configuration, and troubleshooting components. Emphasizes identifying, resolving, and documenting network crises and activating the response team.