OFFICIAL ADDENDUM TO THE INSTITUTIONAL CATALOG
ADDENDUM NO. 2025-01

AI SOLUTIONS SPECIALIST (Certificate – 900 Hours)
Credential Awarded: Certificate
CIP Code: 11.0102
Addendum Issue Date: *12/2/2025*
Effective Term: This addendum becomes an integral part of the Institutional Catalog 2025–2026 Vol. 6 Num. 1.

I. Purpose of the Addendum

This addendum officially incorporates the **AI Solutions Specialist Certificate Program** into the Password Technical College (PTC) Institutional Catalog. The program content, learning outcomes, structure, and tuition reflect the institution's current approvals and comply with policies established by the Puerto Rico Board of Postsecondary Institutions, and all applicable academic standards.

II. Program Description

The **AI Solutions Specialist Certificate Program** prepares students with the technical and analytical skills required to design, implement, and manage Artificial Intelligence (AI) applications. The program integrates foundational training in Python programming, data science, machine learning, large language models, prompt engineering, automation platforms, and applied AI tools used in business and technical environments.

Its modular curriculum leads students from essential computer skills to advanced AI methodologies, culminating in a **Capstone Project** demonstrating the integration of competencies in a practical AI solution.

Graduates will be qualified for roles such as:

- AI Solutions Specialist
- AI Technician
- Automation Specialist
- Prompt Engineer
- Data Assistant / Junior Data Analyst
- AI Workflow Designer (Zapier, Make, n8n)
- AI Agent Developer

III. General Objectives of the Program

Upon successful completion of the program, students will be able to:

1. Apply programming, data analysis, and mathematical reasoning to develop AI solutions.
2. Implement machine learning models and neural networks for practical applications.
3. Use large language models and prompt engineering techniques to generate and manage content.
4. Integrate AI tools and automation workflows to optimize organizational processes.
5. Demonstrate ethical and responsible practices in AI development and usage.
6. Present, document, and defend an applied AI Capstone Project.

IV. Admission Requirements

- High School Diploma or recognized equivalent.
- Basic computer literacy and comfort using digital tools.
- No prior programming experience is required.

V. Graduate Profile

Graduates of the AI Solutions Specialist Program will be able to:

- Write and troubleshoot Python scripts for data manipulation and automation.
- Use Pandas, NumPy, APIs, and JSON to manage and analyze datasets.
- Build machine learning and deep learning models using standard frameworks.
- Develop advanced prompts and multi-step reasoning workflows for LLMs.
- Create and deploy AI-driven automation processes using Zapier, Make, and n8n.
- Implement NLP and computer vision solutions.
- Produce and defend a fully documented AI project applicable to real-world needs.

VI. Program Structure

Length: 900 Hours (9–11 months)
Credential Awarded: Certificate
CIP Code: 11.0102

The curriculum presented in this addendum is identical to the version approved and filed in the institution's official program records.

Curriculum Outline

Code	Course Title	Hours
AISS-101	Computer Systems & Digital Literacy	25
AISS-102	Logic & Algorithms	30
AISS-103	Python Programming Basics	45
AISS-201	Algebra for Computing	25
AISS-202	Applied Statistics & Probability	30
AISS-203	Calculus & Optimization for AI	35
AISS-301	Data Handling with JSON & APIs	30
AISS-302	Data Analysis with Pandas & NumPy	45
AISS-303	Data Visualization & Intro to Machine Learning	45
AISS-401	Neural Networks & Deep Learning	60
AISS-402	Large Language Models (LLMs) & AI Ethics	60
AISS-501	Prompt Engineering Fundamentals	30
AISS-502	Advanced Prompting & Chain-of-Thought	30
AISS-503	AI Agents with LangChain/AutoGen	60
AISS-601	Natural Language Processing Applications	45
AISS-602	Computer Vision Applications	45
AISS-603	AI Automation Tools (Zapier, n8n, Make)	60
AISS-700	AI Capstone Project	90
	TOTAL PROGRAM HOURS	**900**

AISS-101 — Computer Systems & Digital Literacy (25 hours)

This course introduces students to essential computer components, operating systems, file structures, and productivity tools used in modern workplaces. Students practice navigating cloud platforms, managing folders, and applying safe online practices. By the end of the course, learners will be able to operate digital environments confidently and prepare their systems for programming and AI applications.

AISS-102 — Logic & Algorithms (30 hours)

Students explore computational logic and step-by-step problem-solving to build the foundation for programming. They learn to design algorithms using flowcharts and pseudocode, and analyze how structured reasoning improves code efficiency. The course prepares students to think like developers and translate real-world challenges into logical operations.

AISS-103 — Python Programming Basics (45 hours)

This course introduces Python syntax, programming structures, variables, functions, and error-handling. Students write basic programs that automate repetitive tasks and manipulate user inputs. By the end of the course, learners can build small applications and prepare for advanced data processing and AI tasks.

AISS-201 — Algebra for Computing (25 hours)

Students review algebraic operations, equations, vectors, and matrices, focusing on their practical use in programming and AI. Through Python-based exercises, they learn how mathematical structures support data transformations, graphics, and model development. This course builds the quantitative reasoning required for machine learning.

AISS-202 — Applied Statistics & Probability (30 hours)

This course introduces descriptive statistics, probability distributions, and fundamental statistical testing. Students learn to interpret data patterns and evaluate uncertainty using real datasets. Through Python analysis, they gain the ability to support AI decision-making with statistical evidence.

AISS-203 — Calculus & Optimization for AI (35 hours)

Students explore derivatives, gradients, and optimization concepts essential for training machine learning models. They examine how small adjustments in parameters influence model accuracy and performance. Practical activities help students connect calculus principles to real training processes in neural networks.

AISS-301 — Data Handling with JSON & APIs (30 hours)

Students learn how to request, retrieve, and parse data from APIs using JSON format. They practice integrating external data sources into Python applications, building reliable data pipelines for automation and AI. The course emphasizes real-world use cases such as consuming AI APIs, financial data, and public datasets.

AISS-302 — Data Analysis with Pandas & NumPy (45 hours)

This course focuses on loading, cleaning, transforming, and preparing datasets for machine learning. Students learn to manipulate arrays, handle missing data, and compute descriptive metrics. By mastering Pandas and NumPy operations, learners develop the skills required to manage complex datasets in AI workflows.

AISS-303 — Data Visualization & Intro to Machine Learning (45 hours)

Students create charts, dashboards, and visual summaries using Matplotlib and Seaborn to interpret data effectively. They also experiment with simple machine learning models such as classification and clustering using Scikit-learn. The course builds the bridge between data understanding and automated prediction.

AISS-401 — Neural Networks & Deep Learning (60 hours)

This course introduces artificial neural networks, activation functions, backpropagation, and training methodologies. Students build and train models using frameworks such as TensorFlow or PyTorch, applying them to image, text, or numerical data. The course emphasizes understanding model behavior and evaluating performance.

AISS-402 — Large Language Models (LLMs) & AI Ethics (60 hours)

Students learn how transformer architectures like GPT and BERT process language, generate content, and perform reasoning tasks. They practice using LLMs responsibly in various applications while exploring ethical issues such as bias, privacy, and transparency. The course emphasizes safe and professional deployment of AI systems.

AISS-501 — Prompt Engineering Fundamentals (30 hours)

This course teaches students how to communicate effectively with AI models using structured prompts. They learn techniques for role assignment, context control, template creation, and output refinement. The course helps students produce consistent and accurate responses across business, creative, and academic scenarios.

AISS-502 — Advanced Prompting & Chain-of-Thought (30 hours)

Students explore multi-step prompting strategies that guide AI reasoning and improve answer quality. Techniques such as Chain-of-Thought, RAG, and self-critique prompting are applied to real tasks. This course prepares learners to design prompts that support more complex problem-solving and analysis.

AISS-503 — AI Agents with LangChain / AutoGen (60 hours)

Students build task-oriented AI agents capable of planning, reasoning, and interacting with external tools. They learn how to connect APIs, memory components, and workflows to create multi-step automated solutions. By completing practical projects, learners gain experience developing scalable AI-powered systems.

AISS-601 — Natural Language Processing Applications (45 hours)

This course introduces NLP techniques such as text classification, sentiment analysis, keyword extraction, and summarization. Students build small applications and chatbots using modern libraries like SpaCy, Hugging Face, or NLTK. The course emphasizes practical uses of language models in customer service, education, and business operations.

AISS-602 — Computer Vision Applications (45 hours)

Students learn how computers interpret and analyze images using OpenCV and deep learning. They implement tasks such as object detection, feature extraction, and OCR. The course prepares learners to apply visual AI in areas like automation, surveillance, and digital content creation.

AISS-603 — AI Automation Tools (Zapier, n8n, Make) (60 hours)

This course teaches students how to design automated workflows that combine AI tools, APIs, and business systems. They learn to build triggers, filters, and actions that streamline processes and reduce manual work. Students complete hands-on projects integrating LLMs into real business automation scenarios.

AISS-700 — AI Capstone Project (90 hours)

The capstone allows students to design and develop a complete AI solution addressing a real business or community need. Students document their analysis, model development, workflows, and testing process while preparing a final presentation. The project demonstrates readiness for professional roles in AI and automation.

VII. Instructional Methodology

- Instructor-led theoretical instruction
- Hands-on programming and AI labs
- LMS-based asynchronous activities
- Applied exercises, simulations, and integrations with real tools
- Capstone design, development, and oral defense

VIII. Graduation Requirements

To graduate from the AI Solutions Specialist Program, the student must:

1. Complete **all 900 clock hours** of the curriculum.
2. Achieve a minimum **2.00 cumulative GPA**.
3. Successfully complete and defend the **AI Capstone Project**.
4. Meet all financial obligations to the institution.

IX. Program Tuition and Fees

As listed in the Institutional Catalog ():

Description	Amount
Tuition (900 hours)	$8,100.00
Admission Application Fee	$25.00
Initial Orientation Fee	$50.00
Enrollment Fee	$50.00
Graduation Fee	$100.00
Student Accident Insurance	$7.00
Campus Improvements & Maintenance	$200.00
Technology Fee	$200.00
Certification Exams (estimated)	$500.00
Total Estimated Program Cost	**$9,232.00**

X. Industry Certifications & Micro-Credentials

The program provides preparation for:

- Python Programming Certifications
- Introductory Data Science Credentials
- Generative AI & Prompt Engineering Micro-Credentials
- Automation Tools Certifications (Zapier, Make, n8n)
- Introductory Machine Learning Badges

XI. Academic Evaluation

Students are evaluated through:

- Written tests
- Hands-on laboratories
- Coding assignments
- Competency-based rubrics
- Module projects
- Final Capstone evaluation

XII. Curriculum Modification Policy

Password Technical College reserves the right to make academic adjustments in accordance with the procedures established in the Institutional Catalog for "Curriculum and Cost Modifications."

Certification of Addendum

I hereby certify that this addendum accurately reflects the approved content of the AI Solutions Specialist Program and is hereby incorporated into the Institutional Catalog 2025–2026 Vo. 6. Num 1.

Javier P. Irizarry Riveiro
Executive Director
Password Technical College