ALPVEST INSTITUTE FOR FUTURETECH

AIFT STEAM Foundation Programme

Migration from STEM to STEAM

A structured bridge into higher education, future-focused learning and responsible innovation

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The programme closes the gap between access and readiness

Admission creates an opportunity. Readiness determines whether learners can use it.

THE DESIGN RESPONSE

A guided transition into introductory higher education study

- Strengthen quantitative and scientific confidence
- Build practical digital and AI literacy
- Develop human-centred problem-solving and innovation
- Cultivate academic independence, ethics and responsible citizenship

Five components form one integrated readiness system

1

Design Thinking

Empathy, ideation, prototyping

2

Mathematics

Reasoning, calculation, modelling

3

Digital Literacy

Productivity, information, safety

4

Physical Science

Evidence, mechanics, matter

5

Responsible AI

Prompting, verification, oversight

Integrated STEAM Challenge: knowledge applied to a relevant real-world problem

The architecture is substantial, structured and achievable

5

integrated components

6

study units per component

30

study units across the programme

1

integrated STEAM challenge

The guides combine conceptual learning, guided practice, knowledge checks, practical activities, reflection and applied assessment.

The learner is supported from diagnosis to confident participation

01	**Identify**	Entry profile and readiness needs
02	**Orient**	Expectations, tools and study practices
03	**Develop**	Concepts, guided practice and feedback
04	**Apply**	Interdisciplinary STEAM challenge
05	**Progress**	Readiness evidence and next-step plan

School leavers • adult returners • prospective HE students

Design thinking turns knowledge into human-centred solutions

FOUNDATIONAL CAPABILITY

creative, systematic and responsible problem-solving.

Six progressively structured study units

01	Foundations of design thinking
02	Empathy and user research
03	Creativity, ideation and problem definition
04	Prototyping and user-experience design
05	Testing, iteration and AI-assisted design
06	**Innovation project and entrepreneurship**

Mathematics builds the language of evidence and technology

FOUNDATIONAL CAPABILITY

mathematical reasoning, calculation and modelling.

Six progressively structured study units

01	Numerical and algebraic foundations
02	Equations, formulae and problem-solving
03	Functions, graphs and financial mathematics
04	Measurement, geometry and trigonometry
05	Data, statistics and probability
06	**Integrated mathematics and HE readiness**

Digital literacy enables safe, productive participation

FOUNDATIONAL CAPABILITY

confident, critical, safe and ethical digital participation.

Six progressively structured study units

01	Digital foundations for higher education
02	Digital learning and academic productivity
03	Information, data and media literacy
04	Digital communication and citizenship
05	Cybersecurity, privacy and digital well-being
06	**Future technologies and digital transformation**

Physical science connects quantitative reasoning to the real world

FOUNDATIONAL CAPABILITY

scientific reasoning, evidence interpretation and safe practice.

Six progressively structured study units

01	Scientific and quantitative foundations
02	Motion and forces
03	Momentum, work, energy and power
04	Electricity and magnetism
05	Waves, sound and electromagnetic radiation
06	**Matter, bonding and quantitative chemistry**

AIFT

Responsible AI literacy keeps human judgement at the centre

FOUNDATIONAL CAPABILITY

critical AI use, verification, ethics and accountability.

Six progressively structured study units

01	Understanding artificial intelligence
02	Data and machine-learning foundations
03	Generative AI and prompt literacy
04	Evaluating and verifying AI-generated outputs
05	Ethics, responsible AI and human oversight
06	**Artificial intelligence applications**

The Integrated STEAM Challenge is where readiness becomes visible

1

Understand

A real educational, social, technological or community need

2

Investigate

Users, context, evidence and constraints

3

Create

Mathematical, scientific, digital and AI-supported ideas

4

Test

Prototype, verify, refine and reflect

5

Communicate

Present a responsible, feasible solution concept

The challenge integrates disciplines without diluting their foundational standards.

Learning is guided, applied and progressively more independent

SUPPORTED LEARNING

- Concise explanations and worked examples
- Facilitator demonstrations and guided practice
- Practical, scenario-based and collaborative activities

ACTIVE APPLICATION

- Simulations, digital tools and Moodle-supported learning
- Knowledge checks, feedback and error correction
- Projects, reflection and readiness planning

Contact and distance learners work toward equivalent outcomes and assessment standards

Assessment produces evidence of readiness, not merely recall

Diagnostic	Establish support needs; no contribution to the final result
Formative	Knowledge checks, guided activities and feedback
Applied	Portfolios, problem-solving, investigation and case analysis
Integrated	STEAM challenge or final innovation/readiness task
Reflective	Learner evaluates progress and plans next development

Responsible technology use is designed into the curriculum

Human accountability	Learners remain responsible for their final work
Verification	Claims, calculations, sources and AI outputs must be checked
Privacy and safety	Personal and institutional information must be protected
Transparency	Material AI assistance must be acknowledged where required
Inclusion and ethics	Solutions consider dignity, access, bias and sustainability

The regulatory position is clear and appropriately bounded

THE PROGRAMME IS

- An institutional higher education readiness intervention
- A structured bridge toward introductory NQF Level 5 study
- A platform for academic, digital and future-skills development

THE PROGRAMME IS NOT

- A registered qualification or credit-bearing module
- A replacement for the National Senior Certificate
- A guarantee of admission or alteration of approved entry requirements

AIFT seeks collaboration that strengthens quality and national relevance

Proposed areas of engagement

01	**Expert review**	Purpose, curriculum coherence and STEAM integration
02	**Advisory input**	Science, technology, innovation and future-skills priorities
03	**Quality enhancement**	Assessment, delivery, inclusion and learner progression
04	**Collaboration**	Experts, learner exposure, pilots and suitable national initiatives

The shared objective: a stronger, more inclusive pipeline into higher education and future-focused fields