

AUTO DIGITID AFRICA

ACCREDITATION-READY CURRICULUM DOCUMENT · 2026 EDITION

Bachelor of Technology

Automatic Identification, Data Capture (AIDC) & Intelligent Automation

Architecture, Systems & Strategy Track

DURATION	CREDITS	NQF LEVEL	MODE
4 Years	128	Level 7	FT · Modular · Hybrid

PREPARED FOR UNIVERSITIES, TVETs & ACCREDITATION BODIES

Vendor-Neutral · Africa-First · Globally Aligned

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PROGRAM INFORMATION

Program Title	Bachelor of Technology in Automatic Identification, Data Capture (AIDC) & Intelligent Automation
Award	Bachelor of Technology (BTech)
Curriculum Track	Architecture, Systems & Strategy
Duration	4 Years (8 Semesters)
Credit Load	128 Credits
Delivery Mode	Full-time / Modular / Hybrid
NQF Alignment	Level 7 (adaptable by country)
Curriculum Philosophy	Architecture-first, vendor-neutral, Africa-contextualised
Program Orientation	Standards-driven, globally aligned, industry-defended
Exit Awards	Diploma exit (after Year 2); Higher Diploma exit (after Year 3, optional)
Capstone Requirement	Mandatory industry-defended architecture project (Year 4)
Industrial Attachment	8–12 weeks (Year 3, Semester 2)
Owning Institution	Auto DigitID Africa (curriculum licensor) in partnership with adopting institutions

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PROGRAM PHILOSOPHY

This curriculum produces architects, systems thinkers, and intelligent-automation strategists for Africa's most demanding industries. It is intentionally separated from Auto DigitID Africa's certification programs, which own deployment, configuration, and tooling.

The governing principle

The university teaches **design, architecture, and decision-making**. The certification ladder teaches **deployment, configuration, and execution**. Both are valuable. Both are paid. Each lives in exactly one place — never both.

WHAT THIS CURRICULUM DEVELOPS

- Systems architects capable of designing the full AIDC + AI stack
- Automation strategists who translate business problems into workflows
- Enterprise integration thinkers fluent in ERP / WMS / MES / EHR contexts
- AI-enabled operations leaders with governance and ROI fluency
- Standards-literate professionals (GS1, EPC, ISO, DPP, biometrics)

3 GRADUATE PROFILE

Upon successful completion of the BTech, graduates will demonstrate the ability to:

- Architect enterprise-grade AIDC ecosystems across the 5-layer Intelligence Stack.
- Design AI-enabled operational workflows that move beyond dashboards to decisions.
- Model and defend ROI-driven automation programs to executive audiences.
- Design traceability, identity, and digital product passport (DPP) systems.
- Evaluate enterprise integration architectures across ERP, WMS, MES, TMS, and EHR ecosystems.
- Lead intelligent automation transformation initiatives in real African operating conditions.
- Apply governance, ethics, and compliance frameworks to AI and identification systems.

4 PROGRAM LEARNING OUTCOMES (PLOS)

On successful completion, graduates shall be able to:

PLO Code	Program Learning Outcome
PLO 1	Explain the principles of AIDC, IoT, AI, and intelligent automation systems.
PLO 2	Design enterprise-grade data capture and identification architectures.
PLO 3	Analyse operational workflows and identify automation opportunities.
PLO 4	Evaluate integration architectures across ERP, WMS, MES, TMS, and EHR ecosystems.
PLO 5	Apply standards including GS1, EPC, ISO, DPP, and digital identity frameworks.
PLO 6	Design AI-assisted operational intelligence and decision-support systems.
PLO 7	Construct ROI and business justification models for technology programs.
PLO 8	Evaluate governance, ethics, privacy, and security implications of AI and AIDC systems.

PLO Code	Program Learning Outcome
PLO 9	Develop scalable implementation, change-management, and adoption strategies.
PLO 10	Defend enterprise architecture decisions before mixed academic and industry panels.

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CREDIT STRUCTURE

Total credit load is balanced across foundational, integration, research, and industrial components.

Category	Credits
University Common Units	18
Core AIDC & Systems Units	74
Integration, AI & Automation Units	18
Research & Capstone	12
Industrial Attachment	6
TOTAL	128 Credits

Note: One credit corresponds to approximately 10 notional learning hours per semester week. Institutions may map this to ECTS, SAQA, or local frameworks during adoption.

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YEAR-BY-YEAR CURRICULUM STRUCTURE

Each year is anchored to a dominant cognitive verb that defines what students do at that stage of their development: Year 1 — Understand, Year 2 — Structure, Year 3 — Design, Year 4 — Architect.

YEAR 1 · Foundations of AIDC Systems

Build conceptual clarity of AIDC as enterprise infrastructure.

SEMESTER 1

Code	Unit Title	Credits
AID 101	Introduction to AIDC Systems	3
AID 102	Fundamentals of Digital Systems	3

Code	Unit Title	Credits
AID 103	Principles of Data Capture Technologies	3
AID 104	Communication & Technical Writing	2
AID 105	Mathematics for Intelligent Systems I	3
AID 106	Introduction to Supply Chain Systems	3
AID 107	Computer Applications & Productivity Tools	2

SEMESTER TOTAL: 19 CREDITS

SEMESTER 2

Code	Unit Title	Credits
AID 108	Barcode & Identification Standards	3
AID 109	RFID, Biometrics & Identity Concepts	3
AID 110	Networking & Connectivity Principles	3
AID 111	Data Quality & Information Integrity	3
AID 112	Fundamentals of IoT & Edge Systems	3
AID 113	Introduction to Programming Logic	2
AID 114	Entrepreneurship & Innovation	2

SEMESTER TOTAL: 19 CREDITS

YEAR 1 OUTCOME

Students understand what AIDC is, why it matters, and where it sits in modern enterprise architecture. Conceptual labs only — no physical device configuration.

YEAR 2 · Systems, Standards & Architecture

Develop systems thinking and architecture understanding.

SEMESTER 1

Code	Unit Title	Credits
AID 201	AIDC Systems Architecture	3
AID 202	Enterprise Systems Fundamentals	3
AID 203	Digital Identity & Security Frameworks	3
AID 204	Standards & Interoperability	3
AID 205	Database Concepts & Information Flows	3
AID 206	Workflow Mapping & Process Analysis	3

SEMESTER TOTAL: 18 CREDITS

SEMESTER 2

Code	Unit Title	Credits
AID 207	Data Modelling & Integration Concepts	3
AID 208	Real-Time Visibility Systems	3
AID 209	Mobile & Edge Computing Strategies	3
AID 210	Cloud Systems & Enterprise Platforms	3
AID 211	Research Methods & Technical Documentation	3
AID 212	Systems Failure Analysis	3

SEMESTER TOTAL: 18 CREDITS



EXIT OPTION

Diploma in AIDC Systems & Operations Architecture

Recommended parallel certification: Auto DigitID Professional. Students may exit, work, and return for Years 3–4 under recognition-of-prior-learning provisions.

YEAR 3 · Industry System Design & Integration

Translate business problems into defensible system architectures.

SEMESTER 1

Code	Unit Title	Credits
AID 301	Logistics & Warehouse Systems Architecture	3
AID 302	Healthcare Traceability & Digital Health Systems	3
AID 303	Retail, POS & Omnichannel Systems	3
AID 304	Public Sector Identity & Citizen Systems	3
AID 305	Enterprise Integration Architecture	3
AID 306	API & Event-Driven Systems	3

SEMESTER TOTAL: 18 CREDITS

SEMESTER 2

Code	Unit Title	Credits
AID 307	Workflow Engineering & Automation Strategy	3
AID 308	Industrial IoT & Smart Manufacturing	3
AID 309	RTLS, Digital Twins & Operational Visibility	3
AID 310	Business Value Engineering & ROI Modelling	3
AID 311	AI Foundations for Operations	3
AID 312	Industrial Attachment I	3

SEMESTER TOTAL: 18 CREDITS



EXIT OPTION

Higher Diploma in AIDC Integration & Industry Systems (Optional)

Recommended parallel certification: Auto DigitID Specialist. Includes Industrial Attachment I (8–12 weeks).

YEAR 4 · AI, Automation & Enterprise Strategy

Develop architect-level thinking and strategic command.

SEMESTER 1

Code	Unit Title	Credits
AID 401	AI in AIDC Systems	3
AID 402	Machine Vision & Intelligent Inspection	3
AID 403	Enterprise Automation & Orchestration	3
AID 404	Governance, Ethics & Compliance	3
AID 405	Strategic Technology Leadership	3
AID 406	Research Project I	3

SEMESTER TOTAL: 18 CREDITS

SEMESTER 2

Code	Unit Title	Credits
AID 407	Change Management & Technology Adoption	3
AID 408	Smart Infrastructure & Future Systems	3
AID 409	Innovation, Policy & Digital Transformation	3
AID 410	Capstone Project & Industry Defence	6

SEMESTER TOTAL: 15 CREDITS

YEAR 4 OUTCOME

Graduates operate at solutions architect / consultant level. The Year 4 capstone is a real-world architecture project, defended before a mixed academic and industry panel.

Recommended parallel certification: Auto DigitID Expert.

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INDUSTRIAL ATTACHMENT

Component	Industrial Attachment I (AID 312)
Year & Semester	Year 3, Semester 2
Duration	8–12 weeks (minimum 320 contact hours)
Credit Value	3 credits within AID 312; additional 3 credits attributed to placement-linked deliverables
Sectors	Logistics, Manufacturing, Healthcare, Retail, Government, Utilities, Banking, CEP
Assessment	Placement report, supervisor evaluation, architecture observation portfolio, oral defence

Permitted activities during attachment

- Process analysis and end-to-end workflow documentation.
- Systems observation across ERP / WMS / MES / EHR / POS environments.
- Workflow evaluation and bottleneck identification.
- Architecture documentation and diagramming.
- Stakeholder requirement gathering and persona mapping.

Activities outside the academic scope

- Vendor-specific device configuration or commissioning.
- Hands-on RFID reader tuning, scanner setup, or printer provisioning.
- Mobile device management (MDM) deployment.
- Live troubleshooting or field-service support.

These activities remain part of the certification pathway and are not counted toward academic credit.

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CAPSTONE REQUIREMENTS

The Year 4 capstone (AID 410) is the central differentiator of the degree. It is an architectural defence — not a build project — assessed by a mixed academic and industry panel.

Required deliverables

#	Deliverable	Weighting
1	Problem definition and stakeholder context (real African industry)	10%
2	Enterprise architecture design across the 5-layer AIDC Intelligence Stack	20%
3	AI & automation integration strategy (with human-in-the-loop design)	15%
4	ROI and business case (executive-grade, defensible)	15%
5	Governance, ethics, privacy, and compliance framework	10%
6	Phased deployment roadmap and change-management plan	10%
7	Industry panel defence (oral)	20%

ASSESSMENT BAR

The capstone is graded on the candidate's ability to defend architectural decisions — not present them. A pass requires demonstrated reasoning under questioning by senior industry assessors. The capstone is aligned to — and dual-recognised by — the Auto DigitID Expert (Architect) certification.

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ASSESSMENT MODEL

Assessments are competency-based and align with the cognitive ladder of each year. Quizzes alone are insufficient — students must produce defensible artefacts.

Assessment Type	Weighting
Coursework (continuous assessment)	40%
Practical simulations & architecture labs	20%
Projects, case studies & ROI models	20%
Final examination	20%

Year-specific assessment focus

Year	Dominant Assessment Mode
Year 1	Concept exams; conceptual labs producing diagrams, simulations, written analyses.
Year 2	Architecture diagram submissions; standards literacy assessments (GS1, EPC, ISO, DPP).

Year	Dominant Assessment Mode
Year 3	Industry case design submissions; ROI models built and presented to mock executive panels.
Year 4	Strategic written exam; capstone defence before mixed academic and industry panel.

10 TEACHING & LEARNING METHODS

Delivery combines case-based learning, architectural simulations, and industry-defended exercises. The aim is judgement and design fluency — not tool familiarity.

- Case-based learning grounded in real African enterprise problems.
- Architecture simulations using diagramming and modelling tools.
- Workflow analysis and process redesign exercises.
- Industry problem-solving studios with rotating sector focus.
- AI scenario modelling and human-in-the-loop design exercises.
- ROI and business-case justification clinics.
- Strategic design defences before academic and industry panels.

11 LABORATORY MODEL

IMPORTANT — ARCHITECTURE-DRIVEN LABORATORY POSITIONING

This is a conceptual and architecture-driven program. Laboratories focus on systems design, data flow modelling, and architectural reasoning — not vendor tooling.

The curriculum intentionally excludes:

- Scanner configuration and firmware provisioning
- RFID reader tuning and antenna alignment
- Printer setup and label-stock management
- MDM deployment and device fleet management
- Vendor-specific deployment tooling

These remain part of the Auto DigitID certification pathway (Professional, Specialist, Expert tiers) and are delivered as a separate, parallel credentialing track.

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RECOMMENDED SOFTWARE ENVIRONMENT

All recommended tools are vendor-neutral, widely available, and aligned to architecture-first learning outcomes.

Domain	Recommended Tools
Architecture modelling	draw.io, Lucidchart, ArchiMate-compatible tools
Process & workflow modelling	Bizagi, BPMN.io, Camunda Modeler
Data modelling	MySQL Workbench, dbdiagram.io
Analytics & visualisation	Power BI, Tableau, Metabase
AI conceptual exposure	Python notebooks (Jupyter, Colab) — light, conceptual
Workflow simulation	Camunda, BPMN simulators
Documentation	Markdown editors, Confluence, Notion

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STAFFING REQUIREMENTS

Recommended faculty mix balances academic credentials with industry experience. Industry adjuncts are essential for capstone defence panels.

- AIDC subject-matter specialists (academic or industry-credentialed).
- Supply chain and operations technologists.
- Enterprise systems architects (ERP, WMS, MES, EHR exposure).
- AI and intelligent automation lecturers.
- Industry adjunct faculty for case studies, capstone supervision, and panel defence.
- Standards specialists with GS1, ISO, or DPP fluency (advisory).

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ENTRY REQUIREMENTS

Minimum entry	KCSE Mean Grade C+ (or recognised equivalent)
Preferred subjects	Mathematics and Physics (or Computer Studies)
Diploma articulation	Permitted — credit transfer assessed by the academic board
Recognition of Prior Learning	Supported, with portfolio and competency assessment

Mature-entry candidates	Considered with a minimum of 3 years relevant industry experience
English proficiency	Required (institution-defined threshold)

15 CAREER PATHWAYS

The degree produces architects, consultants, and strategy leaders — not technicians. Graduates enter the workforce at the price band where a 4-year degree pays for itself.

Role	Primary Sectors
AIDC Solutions Architect	Logistics · Manufacturing · Retail
Enterprise Systems Architect	Banking · Healthcare · Public Sector
AI & Automation Consultant	Cross-sector · Consulting firms
Digital Transformation Lead	Public sector · Enterprise
Operations Strategy Manager	3PL · CEP · Distribution
Healthcare Traceability Architect	Hospitals · Pharma · Public Health
Public Sector Identity Systems Architect	Government · Borders · Banking KYC
Industry Innovation Lead	Logistics · Retail · Manufacturing

16 CERTIFICATION ARTICULATION

The degree articulates with — but does not overlap — the Auto DigitID Africa certification ladder. Each year unlocks a recommended parallel certification, providing stackable industry credentials alongside the academic award.

Academic Stage	Recommended Certification	Career Signal
After Year 1–2	Auto DigitID Professional (Operator)	Deployment-ready technician
After Year 3	Auto DigitID Specialist (Integrator)	Solutions engineer / integrator
After Year 4 + Capstone	Auto DigitID Expert (Architect)	Architect / consultant / strategy lead

SEPARATION OF CONCERNS — ENFORCED

The university teaches design, architecture, and decision-making. The certifications teach

deployment, configuration, and execution.

Universities do not deliver certification content as part of academic credit. Certifications are accessed by enrolment in the Auto DigitID Africa professional track, in parallel to or after the degree.

17 ACCREDITATION POSITIONING

The curriculum is designed to align with established African and international frameworks, and is structured for adoption by accreditation bodies, universities, and TVETs.

- African National Qualifications Framework (NQF) structures — Level 7 alignment.
- TVET articulation pathways for diploma and higher-diploma exits.
- Outcome-Based Education (OBE) principles throughout learning outcomes and assessment.
- Washington Accord-aligned principles for engineering-adjacent components (adaptable).
- Industry-driven STEM education frameworks (skills-first design).
- Mapping documentation for ECTS, SAQA, and university credit-transfer systems is provided during adoption.

18 FINAL POSITIONING

THE DEGREE

Bachelor of Technology in AIDC & Intelligent Automation

Designing and architecting intelligent AIDC systems for real-world industries.

THE CERTIFICATIONS

Professional · Specialist · Expert

Deploying and implementing AIDC systems in real operational environments.

This separation is intentional and structurally enforced across the Auto DigitID Africa ecosystem. It protects academic integrity, preserves commercial clarity, and produces graduates legible to the market at the price band their qualification deserves.

READY FOR ADOPTION

Bachelor of Technology in AIDC & Intelligent Automation

Architecture, Systems & Strategy Track · 2026 Edition

Auto DigitID Africa partners with universities, TVETs, and accreditation bodies across the continent. Talk to us about adoption, faculty enablement, or modular integration.