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D2.3 AgriTech Curriculum

Partners

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Editors	Dr.Eng. Daniel AMARIEI (PAMEA) & Dr. Krisztina TOTH (MATE)
Authors	Dr.Eng. Daniel AMARIEI (PAMEA), Petr UHLIR (WRLS), Konstantinos SOUROULLAS (CARDET), Dr. Krisztina TOTH (MATE), Prof.Dr. Mihai GIDEA (USAMV), Dr. Georgios NTINAS (ELGO), Tomas GAGO (ZSCR), Sebo SANTA (DDTG), Prof.Dr. Gabor MILICS (MATE),
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1. PURPOSE, SCOPE, AND DESIGN CONSTRAINTS

This deliverable defines the AgriTech Curriculum as a structured specification for teaching and assessment. It sets out the module set, Topic structure, learning outcomes, workload, and assessment evidence required to deliver coherent programmes at three award levels.
The curriculum is written for consistent implementation across partners. It uses fixed module codes (**M01 - M07**), a shared structure rule across levels, and common rules for outcome measurability and constructive alignment.
This chapter clarifies what is included in the deliverable, who it is for, the shared seven - module structure applied to all levels, and the assumptions and dependencies that apply to implementation and quality assurance.

1.1. Deliverable purpose and what is in scope

The purpose of D2.3 is to provide an implementation - ready curriculum specification for the AgriTech programme pathway at three award levels (**VET**, **BSc**, **MSc**), to be first tested during the pilot implementation. It translates agreed inputs into level - specific curricula that can be delivered, assessed, and reviewed using common conventions.
In scope, this deliverable defines:

- Programme structure at each level, using the same seven modules (**M01 - M07**).
- Topic titles per module and per level, as already agreed in the curriculum tables.
- Learning outcomes with Bloom tags, written as assessable claims.
- Workload and schedule summaries per level (reported using the agreed workload categories).
- Assessment strategy per level, including assessment evidence types and programme assessment components (P - AS).
- Constructive alignment matrices linking programme outcomes, module outcomes, and assessment evidence.

Out of scope, this deliverable **does not provide**:

- Full teaching materials (slides, readings, lab handouts, videos).
- A learning management system build, software deployment guides, or tool procurement lists.
- Institutional accreditation decisions, credit assignment rules, or national compliance approvals.
- Partner - specific delivery timetables, staffing plans, or procurement planning.

1.2. Target audiences and award levels covered (VET, BSc, MSc)

This deliverable is written for curriculum owners and delivery teams that need a clear and auditable programme specification. It supports consistent interpretation across partner organisations and external reviewers.
Primary target audiences include:

- Curriculum designers and programme leads responsible for adoption and local mapping.
- Trainers, lecturers, and facilitators preparing delivery plans and learning activities aligned to outcomes.

- Quality assurance staff reviewing measurability, alignment, and evidence requirements.
- Assessors and internal moderators using defined evidence types and mapping matrices.
- Project partners validating consistency across levels and sites.

Award level	EQF level	Coverage in this deliverable
VET	5	Full curriculum specification for vocational learners, including programme learning outcomes, module set, workload summary, assessment strategy, module snapshot cards, and alignment matrices.
BSc	6	Full curriculum specification for undergraduate level, aligned to the same module set and coding conventions, with higher cognitive demand and autonomy expectations.
MSc	7	Full curriculum specification for postgraduate level, aligned to the same module set and coding conventions, with advanced analysis, evaluation, and design expectations.

Table 1. Award levels covered by the curriculum

1.3. Curriculum structure rule: same 7 modules across levels

A single structure rule applies across **VET**, **BSc**, and **MSc**: the curriculum is built from the same seven modules (**M0 - M07**). Module codes and module titles remain stable across all levels. This supports comparability, traceability, and consistent programme management across partners.
Each module contains three topics/units (**T1** - **T3**). Topic titles are level - specific and remain unchanged from the agreed curriculum tables. Learning outcomes, assessment evidence expectations, and learner autonomy increase by level, with the module identity and structure kept constant.
M07 serves as the integration module at every level. It consolidates learning across **M01 - M06** and provides a structured route to demonstrate integrated capability using assessment evidence aligned to programme requirements.

Module code	Module title
M01	DEEP TECH AGRICULTURE
M02	PROJECT MANAGEMENT AND INNOVATION
M03	FUNDAMENTALS OF AI
M04	SENSOR TECHNOLOGY IN SMART AGRICULTURE
M05	DATA COMPUTING FOR SMART AGRICULTURE
M06	BLOCKCHAIN TECHNOLOGY FOR AGRICULTURE
M07	INTEGRATION FOR AGRICULTURE DEEP TECH

Table 2. Fixed module set used across VET, BSc, and MSc

Implementation flexibility is limited to delivery choices that do not change the curriculum specification. Delivery mode, learning activities, tools, datasets, and case contexts may be adapted to local

conditions. Module codes, module titles, Topic titles, learning outcomes, and defined assessment evidence types remain unchanged for cross - partner consistency.

1.4. Assumptions and dependencies

The curriculum specification assumes the following conditions for implementation across partners:

- The competence areas, role profiles, and agreed terminology provided as inputs are treated as fixed reference points for curriculum interpretation.
- Providers apply the common rules for writing and assessing learning outcomes, including Bloom tagging and outcome - to - evidence alignment.
- Learners have access to baseline digital capabilities and basic computing facilities appropriate to their award level, including reliable access to learning resources.
- Practical work uses real or representative datasets and scenarios. Field access, farm infrastructure, and specialist equipment availability vary across sites, so equivalent datasets and simulations are acceptable when they support the same learning outcomes.
- Workload is reported using the agreed workload categories and can be mapped to local credit systems through institutional procedures without altering intended learning outcomes.

The curriculum specification depends on:

- Partner validation of curriculum tables, terminology, and coding conventions used across the three levels.
- Availability of suitably qualified teaching and assessment staff with the domain knowledge required for the seven - module set.
- Local institutional processes for programme approval, delivery scheduling, learner support, and assessment moderation.
- Access to baseline infrastructure needed for delivery (learning platform, connectivity, standard productivity tools, and relevant datasets).
- Feedback from implementation activities that inform controlled updates through change control, without altering the module catalogue rule.

2. INPUTS AND TRACEABILITY

This chapter lists the controlled inputs used to produce the curriculum and explains how traceability is maintained from those inputs to the final curriculum specification. The point is simple: a reviewer should be able to see what informed the curriculum and how decisions were kept consistent across partners and levels.

Traceability in this deliverable is handled through stable identifiers and consistent terminology. Module codes (M01 - M07), Topic identifiers (T1 - T3), and learning outcome IDs are used to link curriculum elements to the agreed inputs and to the assessment evidence defined later in the document.

This chapter also clarifies what traceability does and does not mean here. It does not repeat input content. It records which inputs were used, how they were applied, and how changes are controlled so the curriculum remains comparable across VET, BSc, and MSc implementations.

2.1. D2.2 elements used (competence areas, role profiles, terminology)

This curriculum (D2.3) was developed using D2.2 as the controlled input baseline. D2.2 is treated as the source for what the programme must enable learners to do, how the AgriTech role is framed, and which terms must be used consistently across partners.

This section records which elements from D2.2 were used and how they were applied in the curriculum specification. It does not repeat D2.2 content; it describes how D2.2 inputs were operationalised into modules, topics/units, learning outcomes, and assessment evidence across VET, BSc, and MSc.

D2.2 element used	What it provides (high - level)	How it is used in D2.3	Traceability evidence in D2.3
Competence areas	The agreed competence groupings for the AgriTech profile	Used to confirm curriculum coverage across the seven modules (M01 - M07) and to check that module learning outcomes collectively address the competence set	Coverage and mapping tables in Chapter 2; module and programme learning outcomes sections
Role profile(s)	The target role framing, typical responsibilities, and expected performance context	Used to set the level of autonomy, complexity, and expected outputs at VET, BSc, and MSc; used to validate that M07 integrates end - to - end capability	Level progression statements; module assessment evidence descriptions; M07 integration description
Terminology and definitions	The agreed vocabulary and meaning of key terms	Used as the controlled vocabulary across the deliverable to avoid inconsistent naming of the same concept; used to standardise module/Topic wording across levels	Consistent module/Topic naming; consistent terms in outcomes, workload, and assessment sections

Boundaries and constraints (as stated in D2.2)	Assumptions and limits on what the curriculum should and should not cover	Used to confirm the fixed module catalogue rule and to prevent scope creep (no extra modules, no invented topics)	Chapter 1 constraints; fixed module catalogue tables; change control and traceability rules
Alignment intent	The expected relationship between competences, learning outcomes, and assessment	Used to structure constructive alignment: every learning outcome is assessable and linked to defined evidence types	Learning outcome and assessment mapping tables; assessment evidence specification

Table 3. D2.2 inputs used and how they are applied in D2.3

D2.2 inputs are applied consistently across all three award levels by keeping the same module set (M01 - M07) and Topic structure, while increasing cognitive demand, autonomy, and context complexity from VET to MSc.

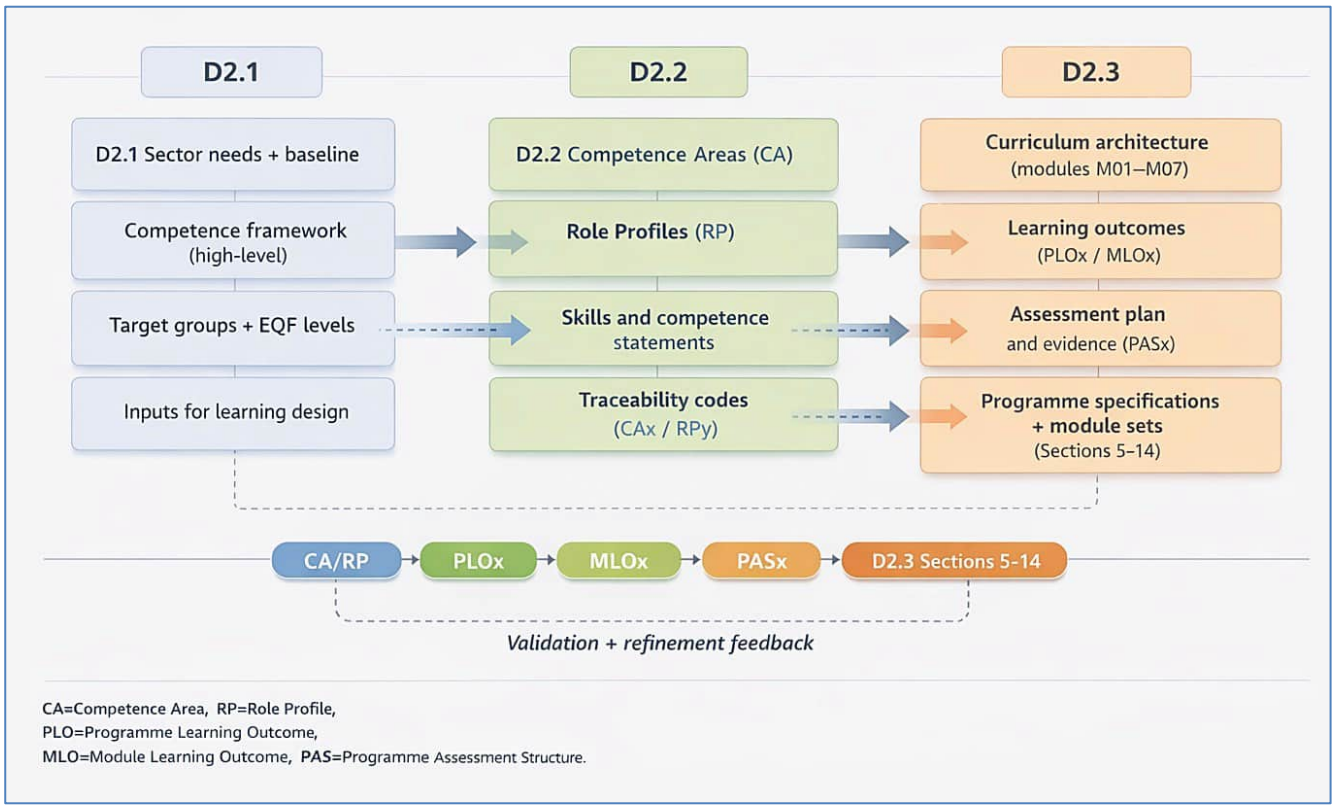


Figure 1. Interdependencies between D2.1, D2.2 and D2.3

Figure 1 summarises how D2.1 evidence informs the D2.2 competence and role profile definition, which in turn drives D2.3 curriculum structure, learning outcomes and assessment evidence.

2.2. Traceability method

Traceability is implemented through a controlled identifier scheme and a fixed mapping chain. Every curriculum element that can change interpretation (module, Topic, learning outcome, assessment evidence) has a stable label and is mapped to its source input and to its verification evidence.

The traceability method is designed to answer three audit questions: (a) what input informed this curriculum element, (b) where is this element implemented in the curriculum structure, and (c) how is achievement evidenced and assessed at the relevant award level.

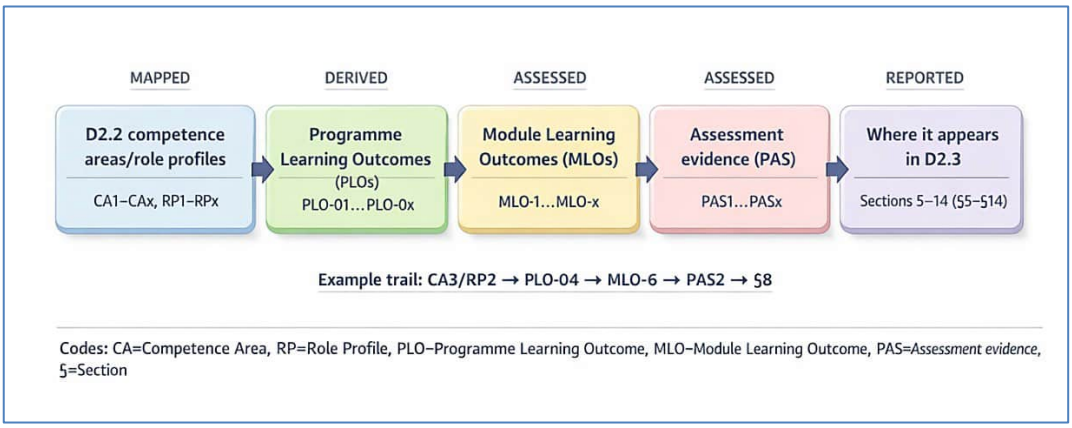


Figure 2. Traceability method and mapping chain

It shows the mapping chain from D2.2 inputs to curriculum structure (modules/topics/outcomes) and onward to assessment evidence (P - AS) and verification tables.

Traceability rules

1. **Stable structural identifiers**
   - Modules are referenced by fixed codes **M01 - M07**.
   - Each module contains exactly three topics/units **T1 - T3** (titles are level - specific but fixed per agreed tables).
   - Learning outcomes are referenced consistently as **PLOs** (programme learning outcomes) and **MLOs** (module learning outcomes).
2. **Single - source inputs**
   - D2.2 is the controlled input baseline for competence areas, role profiles, and terminology.
   - D2.3 does not restate D2.2 content; it records how D2.2 elements are used.
3. **Constructive alignment**
   - Every MLO is written as an assessable statement (observable performance).
   - Every MLO is linked to at least one assessment evidence item and categorised under a programme assessment component (**P - AS - 1**, **P - AS - 2**, **P - AS - 3**) as defined later in the deliverable.
4. **Cross - level consistency**
   - The module catalogue (M01 - M07) is identical across VET, BSc, and MSc.
   - Progression is implemented by increasing cognitive demand, autonomy, and context complexity, without changing module identity or the agreed Topic titles per level.
5. **Change control**
   - Any correction or update is recorded through versioning and a change log, identifying what changed, why, and which curriculum elements are affected.
   - Changes that would alter the fixed module catalogue rule or agreed Topic titles are not permitted within D2.3.

Traceability object	Identifier used in D2.3	Where it appears	How it is verified in D2.3
D2.2 competence areas	Competence area labels (as provided in D2.2)	Inputs and mapping sections	Coverage and mapping tables showing which modules/outcomes address each area
Role profile elements	Role profile labels (as provided in D2.2)	Inputs and level progression logic	Level progression narrative and M07 integration requirements
Terminology	Controlled terms (single term per concept)	Throughout the deliverable	Terminology consistency checks across module tables, outcomes, and assessment text
Module	M01 - M07	Module catalogue and module specification tables	Fixed module set table; consistent use of module codes in mappings
Topic	T1 - T3 within each module	Level - specific module tables	Topic titles reproduced exactly as agreed for each level
Learning outcome	PLO / MLO identifiers	Programme and module learning outcomes sections	Mapping matrices linking outcomes to competences and assessment evidence
Assessment evidence	Evidence item name + P - AS component	Assessment strategy and module assessment sections	Evidence - to - outcome mapping; weighting summaries where applicable

Table 4. Traceability objects and where they are evidenced

This method ensures that a reader can start from a competence or role expectation in D2.2 and trace forward to (***i***) where it is taught (module/Topic), (***ii***) what is expected (learning outcomes), and (***iii***) how it is assessed (defined evidence aligned under P - AS).

2.3. Evidence locations

This section reveals where to find the evidence that supports traceability and audit checks in this deliverable. “Evidence” here means the specific tables, figures, and mappings that show what is taught, what learners must achieve, and how achievement is assessed across VET, BSc, and MSc.
Evidence locations are defined by document section and by evidence type, keeping review work predictable: a single path from inputs to curriculum elements to assessment evidence.

Evidence needed for review	What it proves	Location in D2.3
Controlled inputs used	Curriculum is based on agreed competence areas, role profiles, and terminology	Chapter 2, Section 2.1
Traceability mapping chain	There is a defined method to trace from inputs to modules/outcomes to assessment evidence	Chapter 2, Section 2.2 and Figure 2 - 1
Fixed module catalogue rule	Same seven modules are used across VET, BSc, MSc	Chapter 1, Section 1.3 and the module catalogue table
Level coverage (VET, BSc, MSc)	The deliverable covers the intended award levels	Chapter 1, Section 1.2

Programme learning outcomes per level	What learners must achieve at each award level	Chapter 3 (programme learning outcomes section)
Module specifications per level	What each module covers at each level, using agreed Topic titles	Module specification chapter (module tables for VET, BSc, MSc)
Topic titles per level	No Topic titles were changed or invented	Module specification tables (each module, T1 - T3 per level)
Module learning outcomes per level	What learners must achieve in each module at each level	Module specification tables (MLOs per module and level)
Workload and hour allocation	Workload is stated using the agreed hour categories	Chapter 4 and the level workload summaries
Common delivery rules	Minimum required delivery activities are defined consistently	Chapter 4, Section 4.3
Common assessment components (P - AS)	Evidence types are standardised across modules and levels	Chapter 4, Section 4.4 and the assessment strategy chapter
Outcome - to - assessment alignment	Each learning outcome is linked to assessable evidence	Alignment matrices (main text tables or Annex, depending on layout)
Competence coverage	Competence areas from D2.2 are covered across the curriculum	Coverage/mapping tables (main text or Annex, depending on layout)
Integration requirement (M07)	End - to - end integration is explicitly defined and assessed	M07 module specification and its assessment evidence mapping
Change control and versioning	Curriculum changes are controlled and auditable	Document control section (front matter) and change log (if included)

Table 5. Evidence locations in D2.3

Evidence locations are intended to be read in one direction for verification: inputs (2.1) → traceability method (2.2) → programme outcomes → module and Topic tables → assessment evidence and mappings → workload and delivery rules.

3. LEARNING OUTCOMES AND BLOOM ALIGNMENT RULES

This chapter defines the rules used to write, structure, and quality - check learning outcomes across the curriculum. It sets the standards that make the curriculum auditable: outcomes must be observable, assessable, and consistently phrased so they can be mapped to teaching activities and to assessment evidence without interpretation games.
The curriculum applies the same outcome - writing logic across all three award levels (***VET, BSc, MSc***). What changes by level is the expected cognitive demand, learner autonomy, and complexity of the contexts in which outcomes are demonstrated. Bloom alignment is used as a control mechanism to keep that progression consistent across modules.
This chapter also clarifies how Bloom codes are used in the curriculum tables and how outcome wording is checked for measurability and alignment. The intent is to ensure that each programme learning outcome (PLO) and each module learning outcome (MLO) can be verified through defined evidence, and that level differences are defensible and systematic.

3.1. Rules for writing measurable outcomes

Learning outcomes in this curriculum are written as assessable statements of what the learner is expected to achieve. The rules below follow the **CEDEFOP guidance** on defining, writing and applying learning outcomes, including its "rules of thumb" and the recommended structure of an outcomes statement.
Learning outcomes are treated as intentional outcomes (what the programme/module aims for). Achieved outcomes are verified through assessment evidence and, where applicable, workplace or practice demonstration. Delivery teams are expected to use assessment results and feedback to refine learning activities while keeping the agreed outcomes stable.

3.1.1. Standard structure for every learning outcome

Each learning outcome statement uses the same structure:

- **The learner / student** (learner - centred wording)
- **Action verb** (observable performance, aligned to Bloom level)
- **Object and scope** (what is acted on, and how much depth/breadth is expected)
- **Context/conditions** (where and under what conditions the performance is demonstrated)
- **Standard/criteria** (how achievement is judged, where relevant and feasible)

Recommended template used in tables:

- **Learner is expected to** + *action verb* + *object/scope* + *context/conditions* (+ *standard/criteria*, if needed for clarity).

3.1.2. Rules for measurability and clarity

1. **Use one action verb per outcome** - Each learning outcome contains a single main verb to avoid combining multiple claims in one statement. If two actions are required, split into two outcomes.

2. **Use learner - centred and performance - focused wording** - Outcomes describe what learners do, not what teachers cover. Teacher - centred phrasing (for example “students will be taught…”) is avoided.
3. **Avoid vague verbs unless made testable by explicit criteria** - Verbs such as “know”, “understand”, “be aware of”, “appreciate” are avoided because they do not specify observable performance. Where a higher - level verb is necessary, the statement must define what counts as evidence (for example “evaluate… using defined criteria”).
4. **Specify object and scope** - The statement clarifies what is being acted upon and the expected breadth/depth (for example “identify key data sources and formats used on farms” is clearer than “understand data”).
5. **State the context and conditions** - Each outcome indicates the relevant learning or work context (for example “in a farm scenario”, “using a provided dataset”, “within given constraints”, “following a defined workflow”). This supports consistent assessment across different delivery settings.
6. **Keep statements simple and readable** - Outcomes are short, direct, and free of unnecessary detail. Overly prescriptive outcomes are avoided because they can narrow learning and assessment to checklist behaviour.
7. **Write outcomes iteratively from objectives to assessment evidence** - Outcomes are developed by moving from overall objectives to specific outcomes and then checking alignment to assessment evidence. If an outcome cannot be assessed with available evidence types, it must be revised.
8. **Do not copy outcomes without contextual adaptation** - Outcomes are written to match the programme context and the agreed module/Topic scope. “Cut and paste” outcomes are avoided because they often break alignment and clarity.
9. **Balance knowledge, occupational skills, and transversal competences** - Module outcomes collectively cover (a) core concepts and knowledge, (b) practical and occupational skills, and (c) transversal competences such as problem solving, communication, and responsible decision - making, as appropriate to level.

3.1.3. Ambiguous vs. measurable verb choices (applied consistently)

Avoid (ambiguous)	Use instead (measurable examples)
know, understand, be familiar with	identify, describe, explain, summarise
appreciate, be aware of	compare, justify, interpret, distinguish
learn about, be taught	apply, configure, calculate, produce
evaluate (without criteria)	evaluate using defined criteria; test against specified requirements

3.1.4. Level differentiation rule (VET, BSc, MSc)

The same writing rules apply across levels. Level differentiation is expressed through:

- **Verb choice and Bloom tag** (higher cognitive demand at higher levels),
- **Autonomy and responsibility stated in the context/conditions**, and
- **Complexity of the problem setting** (bounded scenarios at VET, professional multi - actor scenarios at BSc, system - level and governance - constrained scenarios at MSc).

These rules are applied consistently to programme learning outcomes (PLOs) and module learning outcomes (MLOs) to ensure that every outcome is measurable and aligned to assessment evidence.

3.2. Bloom taxonomy tagging approach

Bloom taxonomy tags are used as a control mechanism to keep learning outcomes consistent, measurable, and level - appropriate across VET, BSc, and MSc. Tags support constructive alignment by linking outcome intent to teaching activities and to assessment evidence. Tags are applied to programme learning outcomes (PLOs) and module learning outcomes (MLOs).

3.2.1. Tag set and notation

The curriculum uses six Bloom cognitive process tags:

Tag	Cognitive process	What the learner demonstrates (typical evidence)
R	**Remember**	Recall of facts, terms, basic steps; recognition of concepts.
U	**Understand**	Explanation, interpretation, summarising, classification, examples.
A	**Apply**	Correct use of a method, tool, workflow, or procedure in a defined context.
An	**Analyse**	Breakdown of a problem, diagnosis, comparison, data interpretation, cause - effect reasoning.
E	**Evaluate**	Judgement using criteria, trade - off decisions, validation, justification of choices.
C	**Create**	Design, integration, synthesis, planning, producing a coherent solution or artefact.

Table 6. Bloom tags used in the curriculum

3.2.2. How tags are assigned to outcomes

1. **One primary tag per outcome** - Each outcome receives one primary Bloom tag reflecting its main action verb and expected performance. Complex outcomes are split into separate outcomes to keep tagging accurate.
2. **Verb - driven tagging** - The tag is determined by the action verb and the expected performance context, not by teaching content. Verbs are selected from a controlled set aligned to the six tags.
3. **Context and standard influence the tag** - Outcomes with similar verbs can differ in tag depending on required judgement, autonomy, and evidence standard. For example, “apply a workflow” (A) becomes “evaluate workflow options using criteria” (E) when selection and defence are required.
4. **Alignment to assessment evidence** - Each tagged outcome must have a matching assessment evidence type capable of verifying the cognitive demand implied by the tag. Evidence requirements are adjusted to match the tag without changing the outcome intent.
5. **Consistent tagging across the three levels** - The same tagging rules are used at VET, BSc, and MSc. Level progression is realised through higher - tag distributions, more complex contexts, and higher autonomy.

3.2.3. Level progression expectations using Bloom tags

Bloom tags express expected cognitive demand at each award level in a predictable way:

- **VET (EQF 5):** dominant tags are **R/U/A**, with targeted **An/E** where required by safe practice and basic decision - making.
- **BSc (EQF 6):** dominant tags are **U/A/An/E**, reflecting applied professional performance, analysis of scenarios, and justified choices.
- **MSc (EQF 7):** dominant tags are **An/E/C**, reflecting system - level reasoning, defensible evaluation, and design or integration outputs.

Progression is evidenced by:

- higher - level tags appearing more frequently at higher levels,
- increased complexity of datasets and scenarios,
- reduced scaffolding and increased autonomy,
- stronger requirements for justification, validation, and defended trade - offs.

3.2.4. Quality checks for Bloom tagging

Bloom tagging is checked during curriculum review using these controls:

- each outcome has a clear action verb aligned to one tag,
- the verb, object, and context match the tag's cognitive demand,
- assessment evidence verifies the tagged demand,
- the tag distribution across modules fits the level progression expectations,
- outcome wording remains consistent with module/Topic scope and does not introduce additional content beyond agreed tables.

3.3. Outcome coding convention

Learning outcomes are coded to support traceability, version control, and unambiguous referencing in tables, assessment briefs, and mapping matrices. The coding convention is applied consistently across all three award levels and across all seven modules (M01 - M07).

3.3.1. Objects that receive codes

The curriculum uses codes for:

- **PLO**: Programme Learning Outcomes (per level)
- **MLO**: Module Learning Outcomes (per module, per level)

(Topic objectives remain descriptive statements and are not treated as assessable outcomes unless explicitly labelled as outcomes in the agreed curriculum tables.)

3.3.2. Code format

Programme Learning Outcome code format

- **PLO - [LEVEL] - [NN]**
  - LEVEL: VET, BSc, MSc
  - NN: two - digit sequence number (01, 02, …)

Module Learning Outcome code format

- **MLO - [LEVEL] - [MODULE] - [NN]**
  - LEVEL: VET, BSc, MSc
  - MODULE: M01, M02, …, M07
  - NN: two - digit sequence number within the module (01, 02, …)

Bloom tags are shown separately in tables (for example in a “Bloom” column or in brackets after the outcome text) and are not embedded in the outcome code to keep codes stable if tagging is refined.

3.3.3. Numbering rules

1. **Uniqueness**
   Each outcome code refers to one outcome only.
2. **Stability**
   Once assigned, an outcome code remains stable unless the outcome is removed. Minor wording edits that do not change meaning keep the same code.
3. **Sequencing**
   Numbering runs in simple ascending order per object:
   - PLOs: numbered once per level (PLO - VET - 01, PLO - VET - 02, …).
   - MLOs: numbered within each module per level (MLO - BSc - M04 - 01, MLO - BSc - M04 - 02, …).
4. **Change handling**
   - If a new outcome must be inserted, it is appended using the next available number (no renumbering of existing outcomes).
   - If an outcome is removed, its code is retired and not reused.

3.3.4. Examples (illustrative)

- **PLO - VET - 03**: third programme learning outcome at VET level
- **PLO - MSc - 07**: seventh programme learning outcome at MSc level
- **MLO - BSc - M02 - 02**: second module learning outcome for Module 2 at BSc level
- **MLO - VET - M06 - 01**: first module learning outcome for Module 6 at VET level

3.3.5. Use in tables and mappings

- All learning outcomes are referenced in tables and mapping matrices using these codes to avoid ambiguity.
- Assessment evidence and rubrics reference outcome codes directly to show which outcomes are being verified.
- When outcomes are presented in narrative text, codes may be included in parentheses to support traceability (for example “MLO - BSc - M05 - 03”).

3.4. Outcome volume rule

Learning outcomes are kept to a controlled volume to support reliable delivery, assessment, and moderation. The intent is to avoid outcome lists that are either too broad to assess or so granular that they become unmanageable.

3.4.1. Outcome volume targets (applied consistently)

- **Programme level (PLOs):** A concise set of programme learning outcomes is used per award level to express the overall capability profile. Programme outcomes are not repeated as module outcomes; they are evidenced through the combined achievement of module outcomes.

- **Module level (MLOs):** Each module defines a small, fixed set of module learning outcomes to keep assessment and mapping stable across partners and levels. In this curriculum, each module uses a consistent outcome count per level to support comparability.
- **Topic level:** Topics use objectives to guide teaching and practice. Objectives support outcomes but are not treated as assessed outcomes unless explicitly stated as learning outcomes in the curriculum tables.

3.4.2. Practical constraints on outcome writing

- **One outcome, one claim:** Each learning outcome expresses one assessable claim (one primary action verb). If two performances are required, the statement is split.
- **No micro - outcomes:** Steps, sub - steps, and tool clicks are not written as separate outcomes. They are handled as learning activities, exercises, and assessment criteria within evidence items.
- **No duplicate outcomes:** Outcomes are checked to ensure they are not restating the same expectation using different wording across modules or across levels.

3.4.3. Coverage and balance rule

Outcome volume is controlled without losing coverage by applying these checks:

- **Coverage check:** Across the full module set (M01 - M07), module outcomes collectively cover the competence areas and role expectations used as inputs.
- **Balance check:** Outcomes are distributed so that no single module carries an unrealistic share of programme expectations.
- **Progression check:** The structure (module set and outcome count per module) remains stable across VET, BSc, and MSc, while cognitive demand, autonomy, and context complexity increase by level.

3.5. Alignment rule: one outcome, one assessable claim

Each learning outcome in this curriculum must represent one assessable claim. This rule is used to keep constructive alignment tight and to prevent ambiguous assessment decisions.

3.5.1. What “one outcome, one claim” means

A learning outcome is considered a single claim when:

- it contains **one primary action verb** that drives what is being assessed,
- it refers to **one main object/scope** (what the action applies to),
- it can be verified by **one coherent piece of evidence** (even if that evidence has multiple parts).

If an outcome requires more than one distinct performance, it must be split into separate outcomes so each can be assessed independently.

3.5.2. How the rule is applied in outcome writing

Outcomes must not:

- combine multiple verbs that imply separate performances (e.g., “define and apply and evaluate…”),
- bundle unrelated objects (e.g., “configure sensors and write a business plan…”),

- mix learning processes with performance (e.g., “learn about” or “explore” instead of demonstrable action),
- hide additional requirements in vague phrases (e.g., “and related concepts”, “and more”).

Outcomes should:

- use one verb aligned to one Bloom tag,
- specify the object and context clearly enough that two assessors would interpret it the same way,
- describe performance that can be evidenced using the programme’s defined assessment evidence types.

3.5.3. Outcome splitting rules (when one statement becomes two)

Split an outcome into two when it contains:

- **two different cognitive demands** (e.g., apply a method and evaluate alternatives),
- **two separate evidence expectations** (e.g., produce a dataset and present a stakeholder briefing),
- **two distinct contexts** that would be assessed differently (e.g., lab configuration and field deployment).

3.5.4. Alignment check to assessment evidence

For every outcome, the curriculum applies a simple alignment check:

- **Outcome statement** → identifies one performance claim
- **Bloom tag** → confirms the intended cognitive demand
- **Assessment evidence** → provides a concrete method to verify the claim
- **Criteria/rubric** → defines what acceptable performance looks like

If an outcome cannot be verified by at least one defined evidence item, the outcome wording must be revised or the evidence plan must be adjusted, without changing module/Topic scope.

3.5.5. Examples of non - compliant vs compliant outcome phrasing (illustrative)

Non - compliant (multiple claims)	Compliant (single claim per outcome)
Apply a data cleaning workflow and evaluate data quality.	**Apply a data cleaning workflow to a provided dataset.**
	Evaluate data quality using defined checks and criteria.
Design and deploy a sensor system for a crop field.	**Design a sensor deployment plan for a crop field scenario.**
	Execute a guided sensor deployment and record validation results.

This rule ensures that assessment decisions remain consistent across delivery sites and levels, and that mapping tables remain stable and auditable.

4. COMMON PROGRAMME ARCHITECTURE ACROSS ALL LEVELS

This chapter defines the common architecture rules that apply to the AgriTech curriculum at all three award levels (VET, BSc, MSc). It describes what stays fixed across levels, what is allowed to vary in delivery, and how the programme remains comparable across partners while still being implementable in different institutional settings.

The architecture is built around a stable seven - module catalogue (M01 - M07) and a consistent internal structure for each module (three topics/units, outcomes, workload, and assessment evidence). Level progression is achieved by increasing cognitive demand, autonomy, and problem complexity, not by changing the module set or introducing new content blocks.

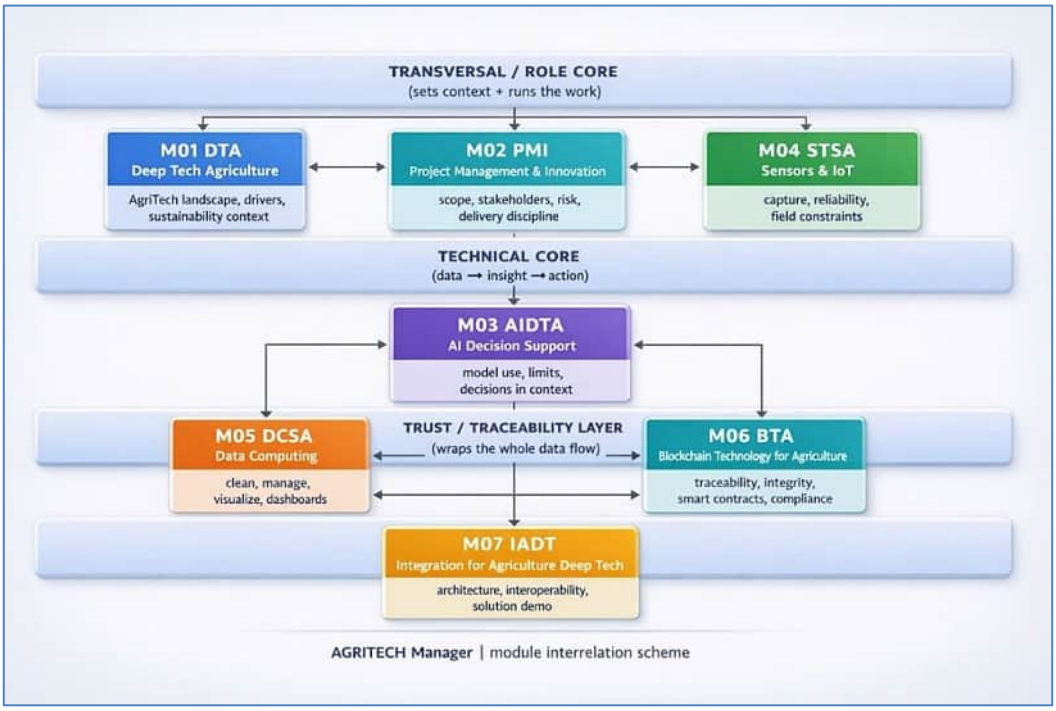


Figure 3. AGRITECH Manager module interrelation scheme

The chapter also defines the practical conventions used throughout the deliverable: how workload is reported, how delivery activities are described, and how assessment evidence is structured using programme assessment components. The aim is boring reliability: different partners can deliver the curriculum, and a reviewer can still verify that the same curriculum was delivered and assessed.

4.1. Module catalogue overview

The AgriTech curriculum uses a fixed catalogue of seven modules (M01 - M07) across all three award levels (VET, BSc, MSc). Module codes and module titles are stable for traceability and cross - partner comparability. Each module is structured into three topics/units (T1 - T3) using the level - specific Topic titles already agreed in the curriculum tables.

The module set is designed as an integrated pathway rather than a list of standalone subjects. M01, M02, and M04 provide the transversal and role core needed to operate in agri - tech contexts. M03 provides the technical decision - support core (data to insight to action). M05 and M06 provide the trust and traceability layer that supports reliable data handling and accountable digital operations. M07 consolidates learning through integration, interoperability, and end - to - end solution design.

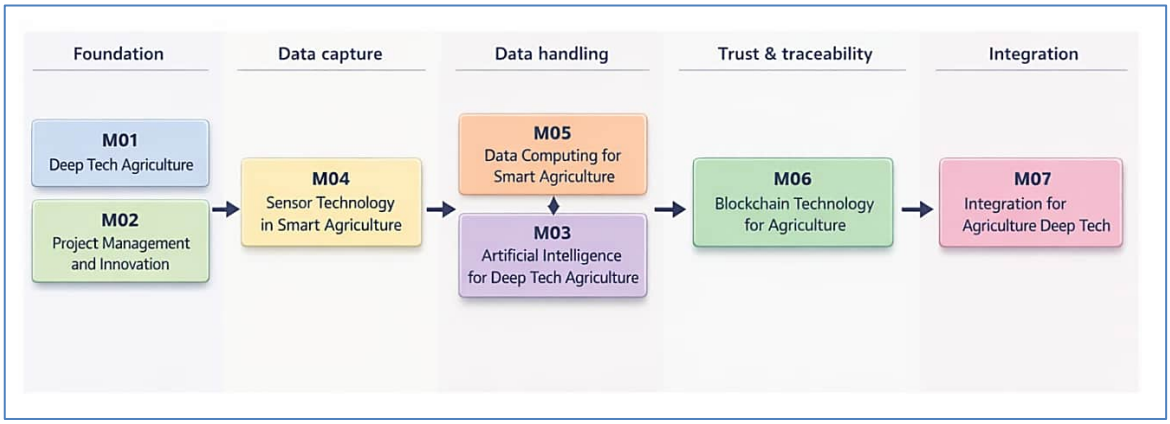


Figure 4. AgriTech 7 - module map (common architecture)

It shows how the seven modules (M01 - M07) relate across four layers: Transversal/Role Core, Technical Core, Trust/Traceability Layer, and Integration/Delivery, including the main dependencies between modules.

Module code	Short code	Module title	Role in the programme architecture
M01	**DTA**	DEEP TECH AGRICULTURE	Sets the sector context and sustainability drivers; frames technology possibilities and limitations for agriculture.
M02	**PMI**	PROJECT MANAGEMENT AND INNOVATION	Defines how work is planned, governed, and evidenced through a project lifecycle (scope, stakeholders, risk, delivery discipline).
M03	**AI - DTA**	FUNDAMENTALS OF AI	Provides the technical decision - support core for agri systems, from data understanding to model use and decisions in context.
M04	**STSA**	SENSOR TECHNOLOGY IN SMART AGRICULTURE	Establishes sensing and IoT foundations for data capture in real field constraints (quality, reliability, deployment limits).
M05	**DCSA**	DATA COMPUTING FOR SMART AGRICULTURE	Covers data handling and processing needed for decisions (collection, cleaning, management, visualisation, dashboards).
M06	**BTA**	BLOCKCHAIN TECHNOLOGY FOR AGRICULTURE	Adds integrity and traceability controls (traceability models, smart contracts, compliance - oriented recordkeeping).
M07	**IADT**	INTEGRATION FOR AGRICULTURE DEEP TECH	Integrates the full stack into a coherent solution (architecture, interoperability, integration planning, demonstration outputs).

Table 7. Common module catalogue (used at VET, BSc, MSc)

Across VET, BSc, and MSc, the module catalogue remains unchanged. Progression is achieved through the level - specific Topic titles and learning outcomes, higher cognitive demand (Bloom tagging), increased autonomy, and more complex application contexts, while keeping the same module identifiers and structure.

4.2. Progression logic across levels

The curriculum applies one progression rule across the three award levels: the module catalogue (M01 - M07) and internal structure (three topics/units per module) remain stable, while the expected depth of understanding, autonomy, and complexity of application increase from VET to BSc to MSc. This ensures comparability across partners and makes the level differences explicit and verifiable.
Progression is implemented through four consistent levers across all modules: (1) higher cognitive demand expressed through Bloom tagging of outcomes, (2) increasing complexity of scenarios and datasets, (3) increasing learner autonomy and responsibility, and (4) increasing expectations for decision justification and evidence quality.
This logic is applied without changing agreed module titles or Topic titles. Differences between levels are realised through the level - specific learning outcomes, assessment evidence expectations, and the complexity of the contexts used for practice and assessment.

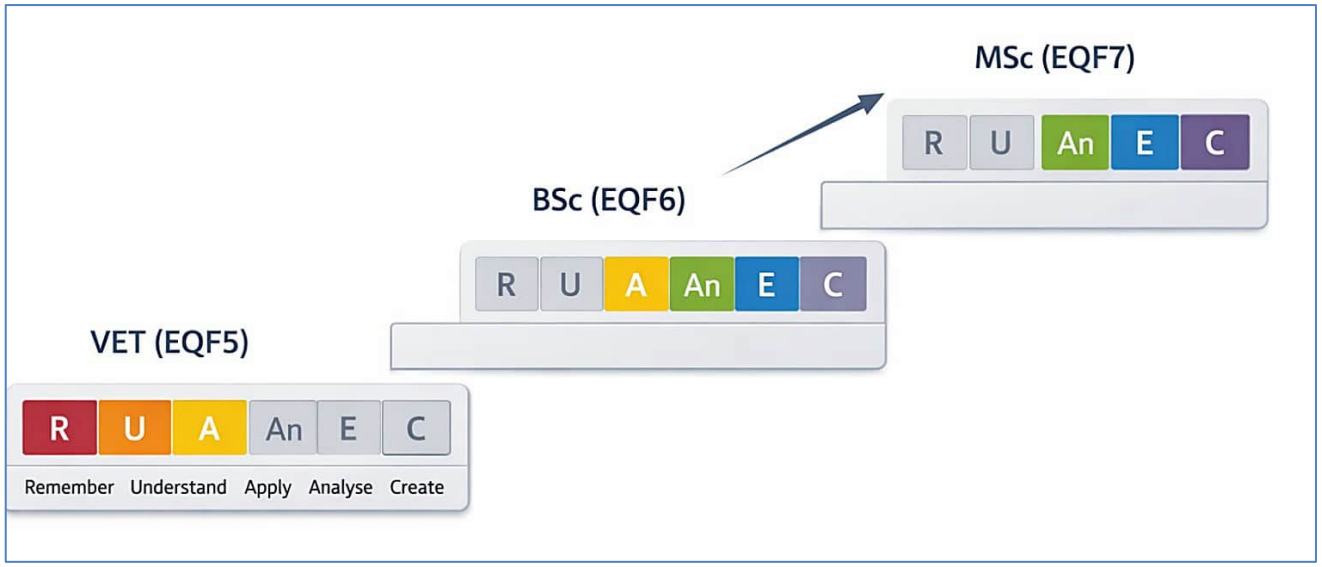


Figure 5. Progression logic across VET, BSc, MSc

It shows how cognitive demand, autonomy, and context complexity increase from VET to MSc while keeping the same seven - module structure.

Dimension	VET (EQF 5)	BSc (EQF 6)	MSc (EQF 7)
Primary cognitive demand (Bloom emphasis)	Remember, Understand, Apply	Understand, Apply, Analyse, Evaluate	Analyse, Evaluate, Create
Context complexity	Bounded tasks in familiar scenarios (single farm/site, constrained variables)	Professional scenarios with multiple constraints and stakeholders	System - level scenarios with organisational, governance, and interoperability constraints
Learner autonomy	High guidance and structured templates	Guided independence with defined checkpoints	Independent decisions with review points; defended trade - offs expected
Evidence standard	Correct execution and clear explanation in simple terms	Justified choices with structured reasoning and appropriate documentation	Defensible evaluation and design decisions with explicit assumptions, risks, and validation logic
Typical outputs	Guided technical tasks and short applied briefs	Professional artefacts (plans, analyses, mappings) supporting delivery decisions	Architecture, integration and governance artefacts; advanced evaluation and design outputs

Table 8. Programme - wide progression summary

Progression is verified through constructive alignment: each level's learning outcomes are tagged and written as assessable claims, and each outcome is linked to assessment evidence that matches the intended level of performance.

4.3. Delivery model options and minimum required activities

The curriculum is delivery - mode neutral. Partners may deliver modules face - to - face, blended, or fully online, provided the agreed learning outcomes, workload allocation, and assessment evidence requirements are met.

Delivery choices may vary by institution (timetabling, platforms, tools, datasets, farm access), but these variations must not change module codes, Topic titles, learning outcomes, or required assessment evidence types. Where local constraints prevent field - based practice, equivalent simulated or dataset - based activities may be used, as long as they evidence the same outcomes.

4.3.1. Delivery model options

Permitted delivery models include:

- **Standard timetable delivery:** scheduled weekly sessions plus assisted practice and independent work.
- **Block delivery:** intensive delivery in short blocks with defined pre - work and post - work.
- **Blended delivery:** a planned mix of synchronous sessions and structured asynchronous learning with scheduled assisted practice.
- **Online delivery:** fully online delivery with scheduled synchronous support, monitored participation, and assessed practical outputs.

4.3.2. Minimum required activities (applies to every module, all levels)

Each module (M01 - M07) must include, at minimum, the activity set below. This ensures that delivery remains comparable across partners and that outcomes are supported by adequate practice and feedback.

ACTIVITY AREA	MINIMUM REQUIREMENT	EVIDENCE TO RETAIN (AUDIT TRAIL)
Teaching/Contact (C)	Structured input mapped to the module learning outcomes (lectures, seminars, guided asynchronous package, or equivalent).	Session plan or learning package outline mapped to outcomes; materials list; participation or completion record.
Assisted practice (A)	At least one facilitated practical activity aligned to the module assessment evidence (lab, workshop, coached exercise, simulation, clinic).	Activity brief; templates used; facilitator notes; participation record.
Individual work (S)	Defined independent tasks that produce assessable outputs aligned to the module outcomes.	Task brief; submission instructions; learner outputs.
Applied scenario task	At least one scenario - based task requiring learners to apply module content to an agricultural context (real or representative).	Scenario description; constraints/assumptions; required outputs; marking rubric.
Formative feedback cycle	At least one formative checkpoint before final submission (draft review, clinic, peer review, or formative quiz with feedback).	Feedback record (annotated draft, checklist, rubric snapshot, peer review record, or equivalent).
Summative assessment	Summative assessment mapped to module outcomes using the defined assessment evidence types.	Final submissions; rubric/marking record; outcome coverage check; moderation notes where applicable.
Learner support and accessibility	Clear instructions, timelines, and support route for questions and reasonable adjustments (as per institutional policy).	Published guidance; support contact route; records as required by the institution.
Recordkeeping and version control	Stable identifiers and consistent naming for module, topics/units, outcomes, and assessment evidence.	Versioned assessment briefs; outcome codes used in rubrics; change log entries if updates occur.

Table 9. Minimum required activities per module

4.3.3. Workload reporting convention used in delivery planning

Workload is reported and planned using these categories:

- **C:** Teaching/Contact hours
- **A:** Assisted practice hours
- **S:** Individual work/Self - study hours
- **T:** Total hours (C + A + S)

Partners may map these hours to local credit systems through institutional procedures, without changing the intended learning outcomes or assessment evidence requirements.

4.4. Common assessment evidence types

Assessment in the curriculum is evidence - based (*components define evidence categories*). Learners demonstrate achievement by producing defined outputs aligned to module learning outcomes (MLOs). To keep assessment consistent across partners and across levels, evidence is grouped into three programme assessment components (P - AS). These components are used across all modules (M01 - M07) at VET, BSc, and MSc level.

P - AS components standardise what counts as acceptable evidence, while allowing delivery teams to select appropriate tools, datasets, and contexts. Level progression is expressed through the complexity of tasks, the autonomy expected, and the standard of justification, not through changing the assessment component structure.

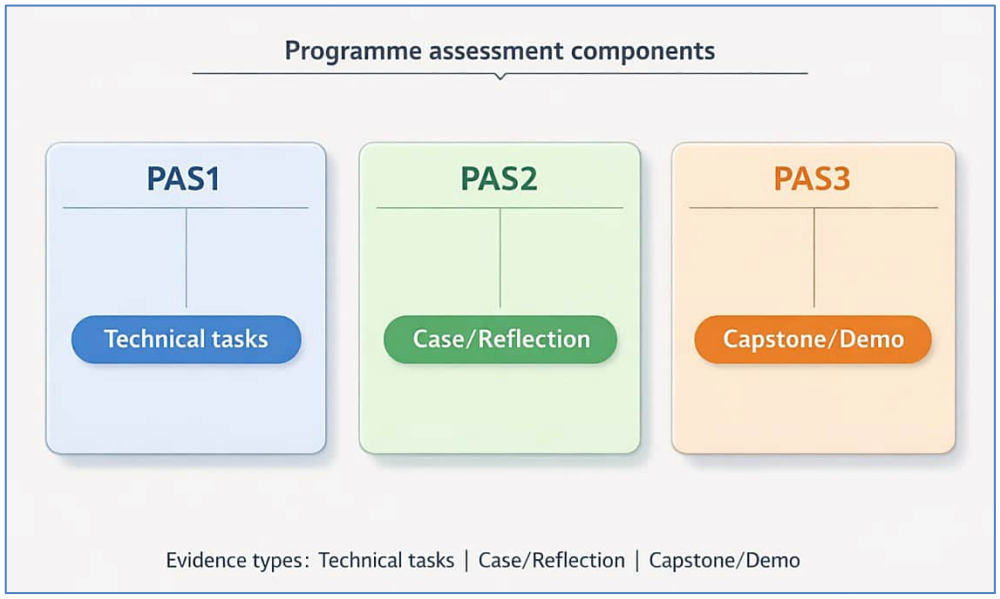


Figure 6. Assessment evidence types and PAS structure

4.4.1. Programme assessment components (P - AS)

Component	Component name	Purpose (what it verifies)	Typical evidence types (examples)
P - AS - 1	**Technical Tasks**	Correct execution of defined technical tasks and workflows aligned to module outcomes.	Practical exercises, lab worksheets, configuration steps, checklists, short technical quizzes, data processing tasks, validation logs, short tool - based outputs.
P - AS - 2	**Case and Reflection**	Sound decision - making in context, including analysis and justification using defined criteria.	Case analysis brief, technology selection memo, pilot or workplan artefacts, risk log, evaluation plan, structured reflection, defended trade - off note.
P - AS - 3	**Integration Mini - Project + Demo**	Integrated capability across modules, including interoperability, documentation, and demonstration of an end - to - end solution concept or prototype.	Integration plan, system architecture map, workflow diagram, test plan and results, documentation pack, demo or presentation with defence, stakeholder - facing summary.

Table 10. Common assessment components and evidence types

4.4.2. Evidence quality expectations by level

Evidence requirements scale by level while keeping the same component definitions:

- **VET (EQF 5):** guided tasks and structured templates; clear completion to specification; basic explanations of choices.
- **BSc (EQF 6):** applied professional artefacts; explicit criteria and justification; documented assumptions and constraints.
- **MSc (EQF 7):** advanced evaluation and design artefacts; defended trade - offs; validation logic, governance considerations, and higher documentation standards.

Minimum assessment rules (applies to all modules and levels)

1. **Outcome coverage:** each module learning outcome must be assessed through at least one evidence item.
2. **Alignment:** evidence must match the intended Bloom level of the outcome. If an outcome requires evaluation, the evidence must include criteria - based judgement, not only task completion.
3. **Weighting:** module assessment weightings sum to 100%. Partners may set weightings per module, provided outcome coverage and alignment remain intact.
4. **Pass threshold:** the default module pass threshold is **50% (or 50/100)** unless institutional regulations require a higher threshold.
5. **Feedback** and **records:** at least one formative checkpoint is required before final submission, and assessment records (briefs, rubrics, submissions, marks, feedback) are retained according to institutional policy.

Quick operational note (not part of the deliverable text): some previously uploaded workspace files have expired on my side, but this section does not depend on them.

PART A. VET CURRICULUM (EQF level 5)

5. VET PROGRAMME SPECIFICATION

This chapter specifies the **VET - level (EQF 5) AgriTech Curriculum** in an implementation - ready format. It defines what learners are expected to achieve at VET level, how the seven modules (M01 - M07) are structured for VET delivery, and how achievement is evidenced and assessed using the common programme assessment components (P - AS).

The VET specification is designed for vocational learners who need practical competence to operate in smart agri - tech contexts under guidance, using structured workflows, templates, and bounded scenarios. The focus is on correct execution, safe and reliable practice, and clear explanation of choices using simple criteria.

The VET programme content and expected performance are aligned to the ***AgriTech Manager competence framework*** defined in ***D2.1*** and to the controlled competence/role inputs used across the curriculum. D2.1 is used here as the reference point for what "competent performance" looks like at role level, while this chapter expresses that performance as VET - appropriate learning outcomes, module/topic structure, and assessable evidence requirements.

5.1. VET entry profile and prerequisites

The VET (**EQF 5**) programme is designed for learners who will operate, support, or supervise smart agri - tech practices in real working contexts. Typical entrants include vocational learners preparing for roles in farm operations, agri - services, advisory support, equipment/systems support, and related technical roles where digital tools are used for planning, monitoring, and basic decision support.

The entry profile assumes learners can follow structured procedures, work with templates, and complete practical tasks under guidance. In line with the competence expectations described in D2.1, the programme targets operational competence: learners can apply defined workflows, handle basic data tasks, and communicate results clearly using simple criteria and evidence.

Area	Minimum prerequisite (required)	Recommended (helps learners progress faster)
General education	Completion of upper secondary education or equivalent vocational education, or recognition of prior learning (RPL) based on work experience.	Prior training in agriculture, land use, food production, or a related technical field.
Digital literacy	Basic ability to use a computer (files/folders, web browsing, email), and use common office tools (documents and spreadsheets).	Confidence with spreadsheets (simple formulas, tables, filters) and basic online collaboration tools.
Numeracy	Comfort with practical numeracy used in operations (units, percentages, simple charts, interpreting tables).	Ability to interpret basic graphs and simple statistics (average, range).
Sector familiarity	Basic understanding of farm activities and constraints, or equivalent familiarity gained through study or work placement.	Hands - on exposure to farm processes (crop or livestock), field operations, or agri - service workflows.
Language	Ability to follow training in the delivery language and read short technical terms used in tools and interfaces.	Ability to read short technical documentation and product datasheets.

Equipment access	Access to a learning device (institutional lab or personal laptop/PC) and stable internet during learning activities.	Access to a smartphone/tablet for field - style data capture activities where applicable.

Table 11. VET entry requirements and prerequisites

Local providers may offer short preparatory activities (before Module M01) to align learner starting points in digital basics, spreadsheet use, and practical data handling. These preparatory activities are optional and must not change the agreed module catalogue or learning outcomes.

5.2. VET programme learning outcomes (PLOs) with Bloom tags

The VET programme learning outcomes define the minimum expected learner achievement at **EQF 5** across the full module set (M01 - M07). They are written as measurable performance claims and tagged using the agreed Bloom notation (R/U/A/An/E/C). The outcome set is aligned to the competence domains defined in D2.1 (technical and digital skills; business and entrepreneurial skills; sustainability and green competencies; policy, regulation and compliance; soft skills and leadership), expressed at an operational VET level.

PLO CODE	VET PROGRAMME LEARNING OUTCOME (EQF 5)	BLOOM TAG
PLO - VET - 01	Describe key environmental and operational challenges in agriculture and explain how digital technologies can help in a defined farm scenario.	**U**
PLO - VET - 02	Identify the main deep tech domains used in agriculture and match each to one typical use case.	**U**
PLO - VET - 03	Apply a simple pilot project template to define scope, roles, steps, and basic risks for a small AgriTech activity.	**A**
PLO - VET - 04	Collect, clean, and organise a small farm dataset using a defined workflow and produce basic tables or charts for a decision.	**A**
PLO - VET - 05	Set up and operate basic sensing in a farm context and interpret readings, including recognising common error sources (e.g., noise, drift, wrong placement).	**An**
PLO - VET - 06	Use outputs from a simple AI - enabled tool or model to support a farm decision and record inputs and reasoning in a structured note.	**A**
PLO - VET - 07	Explain traceability and data integrity needs in agri - food chains and record simple events using a digital ledger approach aligned to the module evidence requirements.	**A**
PLO - VET - 08	Apply basic data protection, access control, and safe data handling rules when storing and sharing farm and operational data.	**A**
PLO - VET - 09	Produce a simple end - to - end workflow description showing how sensing, data processing, AI support, and traceability connect in an AgriTech use case.	**An**

Table 12. VET programme learning outcomes (PLOs) with Bloom tags

5.3. VET workload and schedule summary

The VET programme workload is reported using the common categories defined in Chapter 4: **C** (Teaching/Contact), **A** (Assisted practice), **S** (Individual work/Self - study), and **T** (Total). Hours are stated per module using the fixed module codes (M01 - M07) to support traceability and cross - partner comparability.

The VET workload supports operational competence development aligned with the AgriTech Manager competence framework (D2.1). Learners complete guided teaching input, supported practice, and structured independent tasks that generate assessable evidence for module learning outcomes.

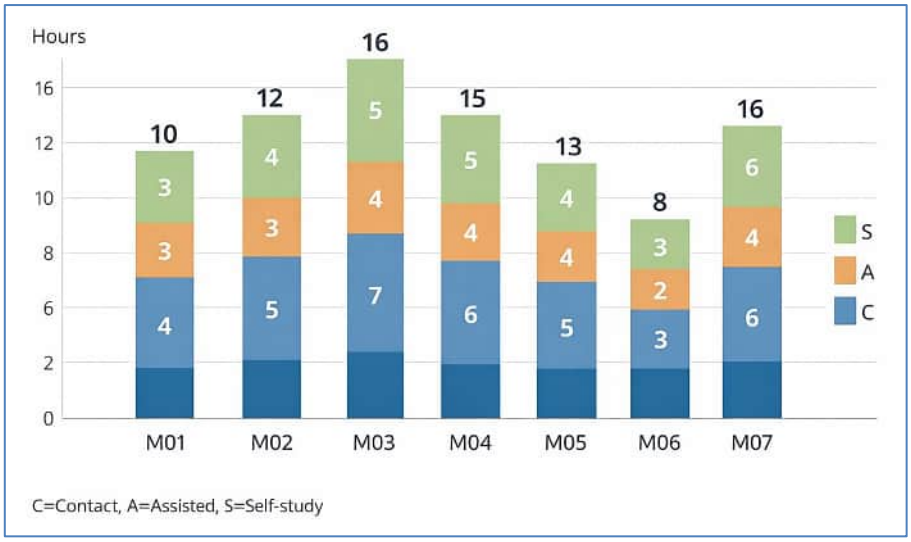


Figure 7. VET workload distribution by module (C/A/S)

It shows the seven VET modules (M01 - M07) in the recommended delivery order, with each module's total hours and the C/A/S split.

MODULE	SHORT CODE	C	A	S	T
M01 DEEP TECH AGRICULTURE	**01DTA**	**4**	**3**	**3**	**10**
M02 PROJECT MANAGEMENT AND INNOVATION	**02PMI**	**5**	**3**	**4**	**12**
M03 FUNDAMENTALS OF AI	**03AI - DTA**	**7**	**4**	**5**	**16**
M04 SENSOR TECHNOLOGY IN SMART AGRICULTURE	**04STSA**	**6**	**4**	**5**	**15**
M05 DATA COMPUTING FOR SMART AGRICULTURE	**05DCSA**	**5**	**4**	**4**	**13**
M06 BLOCKCHAIN TECHNOLOGY FOR AGRICULTURE	**06BTA**	**3**	**2**	**3**	**8**
M07 INTEGRATION FOR AGRICULTURE DEEP TECH	**07IADT**	**6**	**4**	**6**	**16**
TOTAL (programme)		**36**	**24**	**30**	**90**

Table 13. VET workload summary by module (C/A/S/T hours)

The indicative schedule groups modules into delivery blocks that respect dependencies and support gradual progression from context and basic workflows to integration.

Delivery block	Modules included	Block focus	Hours (T)
Block 1	M01, M02	Sector context, technology choices, and basic project discipline for small farm pilots	**22**
Block 2	M04, M05	Data capture and data handling foundations needed for reliable decisions	**28**
Block 3	M03	Using AI - supported tools and outputs for practical decisions in defined scenarios	**16**
Block 4	M06	Integrity and traceability concepts applied to simple agri - food event records	**8**
Block 5	M07	End - to - end integration task connecting sensing, data handling, AI support, and traceability	**16**
TOTAL (programme)			**90**

Table 14. VET indicative delivery blocks (order and rationale)

5.4. VET assessment strategy

The **VET** assessment strategy verifies operational competence at **EQF 5** through practical, scenario - based evidence. Assessment is designed to show that learners can follow defined workflows, perform basic technical tasks reliably, and explain choices using simple criteria. This matches the VET emphasis in the ***AgriTech Manager*** competence framework (D2.1): correct execution, safe practice, and clear communication of results.

Assessment evidence is structured using the common programme assessment components defined in Chapter 4 (P - AS - 1, P - AS - 2, P - AS - 3). The same component structure is used across modules (M01 - M07). Level progression is expressed through task complexity and autonomy, not by changing component definitions.

5.4.1. Assessment components used at VET level

At VET level, assessment evidence is built around:

- **P - AS - 1 Technical Tasks** to verify correct execution of defined steps and routines.
- **P - AS - 2 Case and Reflection** to verify basic analysis and justified choices in a bounded farm scenario.
- **P - AS - 3 Integration Mini - Project + Demo** primarily in **M07** to verify end - to - end integration capability.

Component	Role at VET (EQF 5)	Minimum evidence standard at VET
P - AS - 1 Technical Tasks	Proves learners can complete practical tasks and workflows correctly using templates and guided steps.	Correct completion to specification; basic checks recorded; outputs usable and readable.
P - AS - 2 Case and Reflection	Proves learners can apply simple criteria to a scenario and explain choices and limits.	Clear scenario framing; simple criteria; short justification; reflection on constraints and risks.
P - AS - 3 Integration Mini - Project + Demo	Proves learners can connect the main elements into a single workflow and communicate what they built.	Coherent workflow across modules; documented steps; basic test/validation notes; short demo or walkthrough.

Table 15. VET assessment components and their role

5.4.2. Assessment coverage rules (module and programme)

Assessment must meet the following coverage rules:

1. **Outcome coverage (module level):** every module learning outcome (MLO) is assessed by at least one evidence item.
2. **Evidence - to - outcome traceability:** rubrics and checklists reference outcome codes (MLO codes) to show what is being verified.
3. **Programme coverage:** across all modules, the assessment set evidences all VET programme learning outcomes (PLO - VET - 01 to PLO - VET - 09).
4. **No hidden outcomes:** tasks assess only what is stated in the curriculum outcomes and the agreed Topic scope.

5.4.3. Minimum assessment package per module (VET)

Each module includes, at minimum:

- **One summative P - AS evidence item** aligned to the module outcomes, plus
- **At least one formative checkpoint** before final submission (draft review, coached practice, or feedback quiz).

Requirement	Minimum requirement (all modules M01 - M07)	Purpose
Summative evidence	At least one graded submission mapped to MLOs using P - AS categories	Verifies achievement of module learning outcomes
Formative checkpoint	At least one feedback point before final submission	Reduces failure risk and supports consistent standards
Rubric/checklist	Outcome - referenced marking guide used by assessors	Ensures consistent marking and auditability
Authentication	Simple confirmation of learner authorship (in - class check, oral check, or version history)	Reduces academic integrity risk in practical work

Table 16. Minimum VET assessment package per module

M07 uses **P - AS - 3** as the main summative evidence item, supported by technical outputs from earlier modules.

5.4.4. Marking, pass rules, and resubmission

- **Marking basis:** assessments are marked using rubrics/checklists that reference MLO codes and specify observable performance criteria.
- **Weighting:** module assessment weightings sum to **100%** at module level. Local providers set module weightings provided outcome coverage and alignment are preserved.
- **Pass threshold:** default module pass threshold is **50% (or 50/100)** unless the host institution requires a higher threshold.
- **Resubmission:** resubmissions follow host institutional rules and must target the outcomes not yet achieved. Where feasible, reassessment uses a revised scenario or dataset while testing the same outcomes.

5.4.5. Feedback, moderation, and quality assurance

To support consistent standards across partners:

- **Feedback:** learners receive feedback that is outcome - referenced (linked to the relevant MLO codes) and includes clear improvement actions.
- **Internal moderation:** delivery teams apply basic moderation to a sample of assessments to confirm consistent rubric use and pass/fail decisions.
- **Recordkeeping:** assessment briefs, rubrics, submissions, marks, and feedback records are retained according to institutional policy, with stable naming using module and outcome codes.

5.4.6. Reasonable adjustments and recognition of prior learning

- **Reasonable adjustments:** accessibility and reasonable adjustments follow host institutional policy and must not change the learning outcomes being assessed.
- **Recognition of prior learning (RPL):** where RPL is permitted, evidence presented for RPL must map to the same VET learning outcomes and be judged using the same evidence standards.

5.4.7. End - of - programme Capstone Project requirement (VET)

After completing all seven modules (M01 - M07), each learner must complete an individual **Capstone Project** using a standard template provided by the trainer. The Capstone Project is the programme - level consolidation task that confirms the learner can connect the curriculum elements into one coherent, end - to - end AgriTech workflow at **EQF 5**.

The **Capstone Project** is assessed under **P - AS - 3 (Integration Mini - Project + Demo)** and must demonstrate integrated application of learning from multiple modules. The project topic must be a bounded agricultural use case (real or representative) with clear constraints, a defined workflow, and evidence that the learner can follow basic good practice in data handling, safety, and traceability.

Template section	Minimum content required at VET level	Links to modules (examples)
Use case definition	Farm context, problem statement, goal, scope boundaries, constraints (time, cost, data availability).	**M01, M02**
Stakeholders and roles	Simple stakeholder list and who does what (learner role and assumed roles).	**M02**
Data and sensing plan	What is measured, which sensor/data source is used, where data comes from, basic quality checks.	**M04, M05**
Data handling workflow	Steps to collect, clean, store, and summarise data; basic tables/charts/maps as applicable.	**M05**
AI - supported decision (where applicable)	Use of a simple AI - enabled tool output to support one decision, with inputs and reasoning recorded.	**M03**
Traceability / integrity step	One clear traceability or integrity action (event log, record entry, access control rule), explained in simple terms.	**M06**
End - to - end workflow diagram	One - page workflow showing how sensing → data handling → decision support → recordkeeping connect.	**M07**
Results and validation notes	What worked, what did not, basic checks performed, limitations.	**M04, M05, M07**
Short reflection	What the learner would improve next time and what constraints affected choices.	**M02, M07**

Table 17. Minimum Capstone Project template sections (trainer - provided)

5.4.8. Minimum evidence package and assessment rules

- The learner submits the completed template plus required attachments (e.g., screenshots, tables, short logs, simple workflow diagram).
- The learner provides a short demo or walkthrough (live or recorded) showing the workflow and outputs.
- Marking uses a rubric that references the relevant outcomes (PLOs and the mapped MLOs), focusing on: coherence of workflow, correctness of execution, basic quality checks, and clarity of explanation.
- The Capstone Project is completed **after** all modules are finished. It may be scheduled as part of M07 delivery, but it must be treated as the programme - level integration evidence item.

This requirement ensures every learner produces a standardised, auditable integration output, using the same template structure across delivery sites while allowing local choice of tools, datasets, and use - case context.

6. VET MODULE SET

This chapter specifies how the seven modules (**M01 - M07**) are organised and delivered at VET level (**EQF 5**). It focuses on sequencing, dependencies, and the logic that connects modules into a coherent pathway, without changing the fixed module catalogue or the agreed VET Topic titles.
The VET module set is designed to build operational competence through guided practice, structured templates, and bounded farm scenarios. The sequencing supports a practical learning flow: learners first gain context and basic project discipline, then develop reliable data capture and data handling skills, then use AI - supported outputs for decisions, then apply basic traceability concepts, and finally integrate these elements through M07.
The sequence and dependencies reflect the competence expectations in the ***AgriTech Manager competence framework (D2.1***) at **EQF 5**, expressed as progressive capability building rather than isolated content blocks. The end state is readiness to complete the VET Capstone Project using the trainer - provided template (see Section 5.4).

6.1. VET module sequence and dependencies

The VET programme uses a recommended module sequence that respects learning dependencies and reduces cognitive load. The sequence is not based on preference but on prerequisite logic: learners need basic context and project structure before they can plan and document practical work; they need sensing and data handling foundations before they can interpret AI outputs reliably; and they need integrity/traceability concepts before they can produce an auditable end - to - end workflow.
The module interrelation figure already included in the deliverable is used as the reference for dependency logic.

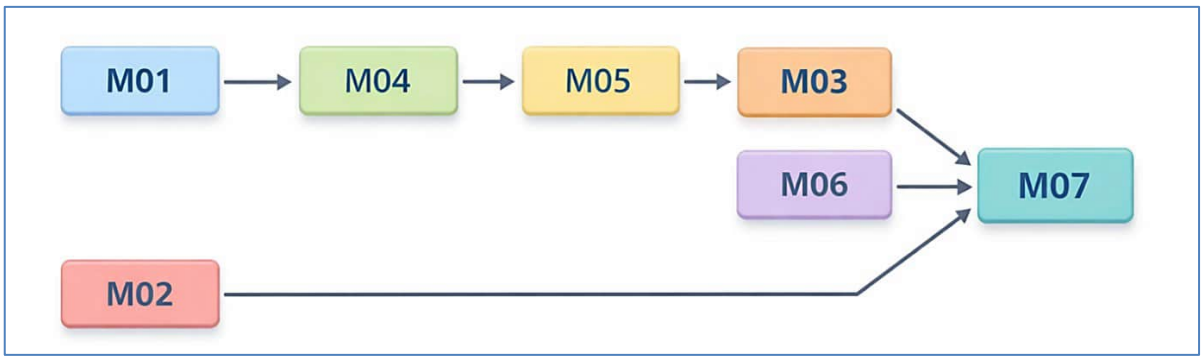


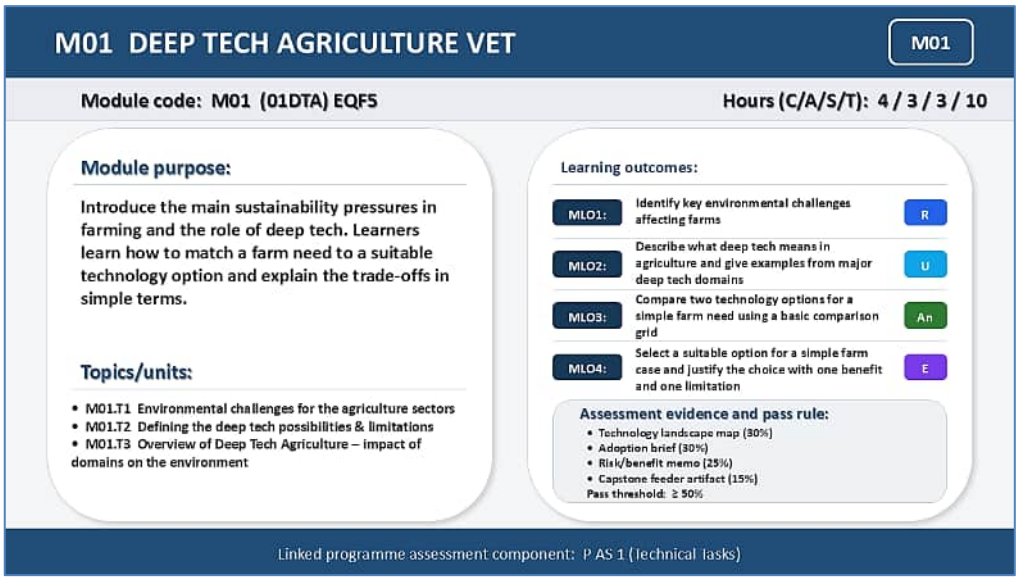
Figure 8. Module sequence and dependencies (common diagram)

It shows how M01 - M07 relate across the transversal/role core, technical core, trust/traceability layer, and integration/delivery layer, including the main dependency arrows that inform the VET sequence.

Module code	Module title	VET focus (what the learner can do at EQF 5 after the module)	Links to D2.1 competence emphasis (high - level)
M01	DEEP TECH AGRICULTURE	Explain main agri challenges and recognise where deep - tech can help, using simple examples and constraints.	Sustainability/green awareness; basic digital/tech literacy in context
M02	PROJECT MANAGEMENT AND INNOVATION	Follow a simple project template to plan a small pilot, define roles, steps, basic risks, and expected results.	Work organisation; communication; basic project discipline
M03	FUNDAMENTALS OF AI	Use AI - supported tools/outputs in a guided way to support a farm decision and record reasoning clearly.	Digital skills; responsible tool use; decision support basics
M04	SENSOR TECHNOLOGY IN SMART AGRICULTURE	Set up basic sensing, collect readings, and recognise common errors in a farm scenario.	Technical/operational competence; safe and reliable practice
M05	DATA COMPUTING FOR SMART AGRICULTURE	Collect, clean, organise, and summarise small datasets using a defined workflow for simple decisions.	Digital/data skills; accuracy and documentation habits
M06	BLOCKCHAIN TECHNOLOGY FOR AGRICULTURE	Explain traceability needs and record simple events using integrity and access rules.	Compliance awareness; responsible data handling
M07	INTEGRATION FOR AGRICULTURE DEEP TECH	Build and explain an end - to - end workflow that connects sensing, data handling, AI support, and traceability.	Integration competence; communication; applied problem solving

Table 18. Recommended VET module sequence (EQF 5) and purpose

6.2. VET module snapshot cards



M02 PROJECT MANAGEMENT AND INNOVATION VET

M02

Module code: M02 (02PMI) EQF5

Hours (C/A/S/T): 5 / 3 / 4 / 12

Module purpose:

Turn a real farm problem into a small pilot project that can be planned, run, and reported. Learners practise the basic routines used in real workplaces: roles, tasks, timelines, risks, and clear reporting.

Topics/units:

- M02.T1 From problem to project idea
- M02.T2 Simple project planning
- M02.T3 Running the work and reporting

Learning outcomes:

MLO1:	Write a clear farm problem statement, project goal, and simple success criteria	A
MLO2:	Produce a basic pilot plan (scope, tasks, timeline, roles, resources) using a standard template	A
MLO3:	Run a short pilot using check ins and milestones, then record progress and issues in a simple log	A
MLO4:	Present pilot results in a short pitch and brief report, linked to the success criteria	C

Assessment evidence and pass rule:

- Completion of learning materials and required assignments
- Post assessment completion required

Pass threshold: ≥ 50% overall completion/achievement

Linked programme assessment component: P AS 1 (Technical Tasks)

M03 FUNDAMENTALS OF AI VET

M03

Module code: M03 (03AI DTA) EQF5

Hours (C/A/S/T): 7 / 4 / 5 / 16

Module purpose:

Build practical AI literacy for farm and agri food contexts. Learners focus on what AI does, what data it needs, how outputs look, and what action follows in real farm work.

Topics/units:

- M03.T1 Fundamentals of AI
- M03.T2 AI applications (yield, robots)
- M03.T3 Case studies & best practices

Learning outcomes:

MLO1:	Explain AI in simple terms and give farming examples of where it helps	U
MLO2:	Explain core AI concepts used in farm tools (data, model, prediction, accuracy) using a guided example	U
MLO3:	Use a no code AI tool to run a guided task and produce one output from provided farm data	A
MLO4:	Interpret an AI output and state one clear farm action that follows, including one limitation or risk	E

Assessment evidence and pass rule:

- Interactive scenario package (40%)
- Practical performance task using a demo AI tool (35%)
- Capstone contribution, Module 3 component (25%)

Pass threshold: ≥ 50% (reassessments permitted on the practical task)

Linked programme assessment component: P AS 2 (Case and Reflection)

M04 SENSOR TECHNOLOGY IN SMART AGRICULTURE VET

M04

Module code: M04 (04STSA) EQF5

Hours (C/A/S/T): 6 / 4 / 5 / 15

Module purpose:

Give learners hands on skills with agricultural sensors: what they measure, how errors happen, how to calibrate, and how to prepare sensor data so it can be used in digital farm systems.

Topics/units:

- M04.T1 Sensor basics and measurement principles
- M04.T2 Calibration, QA/QC, operation
- M04.T3 Data formats, interoperability, data flow management

Learning outcomes:

MLO1:	Identify common agricultural sensor types and state what each one measures	R
MLO2:	Set up a basic sensor reading workflow and collect sample measurements safely	A
MLO3:	Carry out basic calibration and QA/QC checks, then record results in a calibration log	A
MLO4:	Prepare sensor data in a simple interoperable format and describe the data flow into a dashboard or ERP	An

Assessment evidence and pass rule:

- Observed practicals, short quizzes, and artifacts (configs, calibration logs)
- Continuous assessment (60%) + capstone practical (40%)

Pass threshold: ≥ 50/100

Linked programme assessment component: P AS 1 (Technical Tasks)

M05 DATA COMPUTING FOR SMART AGRICULTURE VET

M05

Module code: M05 (05DCSA) EQF5

Hours (C/A/S/T): 5 / 4 / 4 / 13

Module purpose:

Teach the everyday data handling needed for smart farming: collect, clean, organise, and use data to support decisions, including simple mapping outputs that can be discussed with a farm team.

Topics/units:

- M05.T1 Introduction to data computing
- M05.T2 Applications (processing, optimization)
- M05.T3 Organising data for mapping

Learning outcomes:

MLO1:	Identify common farm data sources and file formats used in smart agriculture tasks	R
MLO2:	Clean and organise a small dataset using basic rules for missing values, units, and duplicates	A
MLO3:	Produce a basic chart or table that supports a farm decision and explain what it shows	A
MLO4:	Create a simple map ready dataset and generate a basic map or mapped output	C
MLO5:	Check data quality and explain one limitation of the dataset for decision making	E

Assessment evidence and pass rule:

- Mini project (40%)
- Lab check (30%)
- Quiz (20%)
- Participation (10%)

Pass threshold: ≥ 50% (one resubmission allowed if host rules permit)

Linked programme assessment component: P AS 2 (Case and Reflection)

M06 BLOCKCHAIN TECHNOLOGY FOR AGRICULTURE VET

M06

Module code: M06 (06BTA) EQF5

Hours (C/A/S/T): 3 / 2 / 3 / 8

Module purpose:

Build practical traceability skills using blockchain style thinking: secure records, clear event logs, and evidence. Learners practise what a product passport is and how to spot weak traceability information.

Topics/units:

- M06.T1 Digital security & crypto basics
- M06.T2 Blockchain basics & ledger simulation
- M06.T3 Where is my product from?

Learning outcomes:

MLO1:	Explain basic digital security concepts used in traceability (hashing, keys, integrity) in plain language	U
MLO2:	Demonstrate a simple ledger simulation by recording traceability events and checking record integrity	A
MLO3:	Produce a basic product passport for one batch, including event log and evidence links	C
MLO4:	Evaluate a label or QR traceability record using a checklist and propose concrete improvements	E

Assessment evidence and pass rule:

- Capstone package (60%)
- Quiz (20%)
- Individual worksheet (20%)

Pass threshold: ≥ 50%

Linked programme assessment component: P AS 2 (Case and Reflection)

M07 INTEGRATION AND INTEROPERABILITY VET

M07

Module code: M07 (07IADT) EQF5

Hours (C/A/S/T): 6 / 4 / 6 / 16

Module purpose:

Bring the stack together. Learners connect technologies into a simple working farm setup, document interfaces, troubleshoot basic interoperability issues, and evaluate whether the integrated solution improves work and outcomes on farm.

Topics/units:

- M07.T1 Integrating AI, blockchain, data computing & sensors
- M07.T2 Interoperability & data sharing challenges
- M07.T3 Evaluating integrated solutions

Learning outcomes:

MLO1:	Connect a sensor to a dashboard and confirm correct data updates using basic checks	A
MLO2:	Produce a simple system interface and data flow document using an industry template	C
MLO3:	Analyse a basic integration setup to identify interoperability or data sharing issues and propose a practical fix	An
MLO4:	Evaluate an integrated solution's impact on productivity and sustainability using basic indicators and evidence	E
MLO5:	Deliver a short integration demo and explain design choices and next steps	C

Assessment evidence and pass rule:

- Practical exercise: connect a sensor to a dashboard (50%)
- Documentation report: data flow and interfaces (30%)
- Final quiz: key concepts (20%)

Pass threshold: ≥ 50%

Linked programme assessment component: P AS 3 (Capstone Mini Project + Demo)

PART B. BSc CURRICULUM (EQF level 6)

7. BSC PROGRAMME SPECIFICATION

This chapter specifies the Bachelor level (**EQF 6**) AgriTech curriculum in an implementation - ready format. It defines what learners are expected to achieve at BSc level, how the seven modules (M01 - M07) are structured for Bachelor delivery, and how achievement is assessed through defined evidence. The BSc specification targets learners preparing for professional roles that require independent application of methods, structured analysis, and justified decisions in realistic agri - tech contexts. Learning tasks use broader scenarios than VET and expect clearer documentation of assumptions, limits, and trade - offs.

The BSc programme content and expected performance align with the AgriTech Manager competence framework defined in D2.1. D2.1 is used as the reference point for competence scope. This chapter expresses the competence expectations as **EQF 6** learning outcomes and assessable outputs across the fixed module catalogue.

7.1. BSc entry profile and prerequisites

The BSc (**EQF 6**) programme is designed for learners who can work with structured information, apply methods in context, and produce professional documentation. Typical entrants include undergraduate learners in agriculture, agri - engineering, environmental sciences, food systems, data - oriented programmes, or related fields.

The entry profile assumes learners can study and apply technical concepts with moderate autonomy, interpret data, and communicate results in a structured way. In line with D2.1 competence expectations at professional level, learners are expected to handle multi - constraint scenarios and justify choices using defined criteria.

Area	Minimum prerequisite (required)	Recommended (supports progression)
General education	Eligibility for Bachelor studies under the host institution rules, or recognition of prior learning (RPL) where applicable.	Prior coursework in agriculture, engineering, environmental systems, food systems, or IT - related fields.
Mathematics and statistics	Comfortable with algebra, percentages, units, and interpreting graphs.	Introductory statistics (distributions, correlation, basic inference) and confidence reading simple model outputs.
Digital literacy	Confident use of computer tools, file management, and office applications.	Spreadsheet competence (tables, filters, formulas) and basic data handling habits (naming, version control).
Data basics	Ability to work with simple datasets and interpret tables and charts.	Familiarity with data formats (CSV, JSON), basic data cleaning concepts, and simple visualisation tools.
Programming	Not required as an entry condition unless defined by the host institution.	Basic programming literacy (Python or similar) to support understanding of data workflows and AI tool use.

Sector familiarity	Basic understanding of agriculture or agri - food systems, gained through study or experience.	Exposure to real farm operations, agri - services, or technology - enabled agriculture practices.
Language	Ability to follow technical teaching in the delivery language and write short structured reports.	Ability to read short technical documentation and standards - style guidance.
Equipment access	Access to a learning device and stable internet for the duration of the programme.	Access to basic field - style data capture tools where relevant (mobile device, sensor kits provided by institution).

Table 19. BSc entry requirements and prerequisites

Where learner starting points vary, providers may offer optional preparatory support in data handling, statistics refresh, and basic programming literacy. These supports do not change the agreed module catalogue, Topic titles, or learning outcomes.

7.2. BSc programme learning outcomes (PLOs) with Bloom tags

The BSc programme learning outcomes define the minimum expected learner achievement at **EQF 6** across the full module set (**M01 - M07**). They are written as measurable performance claims and tagged using the agreed Bloom notation (**R/U/A/An/E/C**). The outcomes reflect the competence scope described in D2.1, expressed at Bachelor level as independent application, structured analysis, and justified decisions in realistic agri - tech contexts.

PLO code	BSc programme learning outcome (EQF 6)	Bloom tag
PLO - BSc - 01	Analyse key sustainability and operational challenges in agriculture and relate them to feasible digital intervention points in a defined agri scenario.	**An**
PLO - BSc - 02	Explain major deep tech domains used in agriculture and evaluate their suitability and limitations for a given farm or agri - food need using explicit criteria.	**E**
PLO - BSc - 03	Develop a pilot project plan for an AgriTech solution including scope, stakeholders, workplan, resources, risks, and basic monitoring indicators.	**A**
PLO - BSc - 04	Build and document a data workflow to collect, clean, validate, and structure farm datasets and produce decision - ready summaries (tables, charts, maps, or dashboards).	**An**
PLO - BSc - 05	Select appropriate sensing approaches for a use case, define data quality checks, and interpret sensor data issues (accuracy, precision, drift, noise, placement effects).	**An**
PLO - BSc - 06	Configure or develop a baseline AI approach for an agri use case and evaluate model outputs and limitations using appropriate performance and context checks.	**E**
PLO - BSc - 07	Design and apply a traceability workflow for an agri - food process, defining events, actors, and permissions, and producing an auditable record structure.	**A**
PLO - BSc - 08	Apply responsible data handling and governance practices (data protection, access control, security basics, documentation of assumptions and risks) in project work.	**A**

PLO - BSc - 09	Produce an integrated solution brief that connects sensing, data computing, AI - supported decision steps, and traceability, including a simple architecture and validation plan.	

Table 20. BSc programme learning outcomes (PLOs) with Bloom tags

7.3. BSc workload and schedule summary

The BSc programme workload is reported using the common categories defined in Chapter 4: **C** (Teaching/Contact), **A** (Assisted practice), **S** (Individual work/Self - study), and **T** (Total). Hours are stated per module using the fixed module codes (M01 - M07) to support traceability and consistent delivery planning across partners.

The BSc workload supports **EQF 6** expectations aligned to the competence scope in D2.1. Learners apply methods with increasing autonomy, produce structured documentation, and justify decisions in realistic agri - tech scenarios. Workload allocation balances teaching input with assisted practice and independent production of assessable outputs.

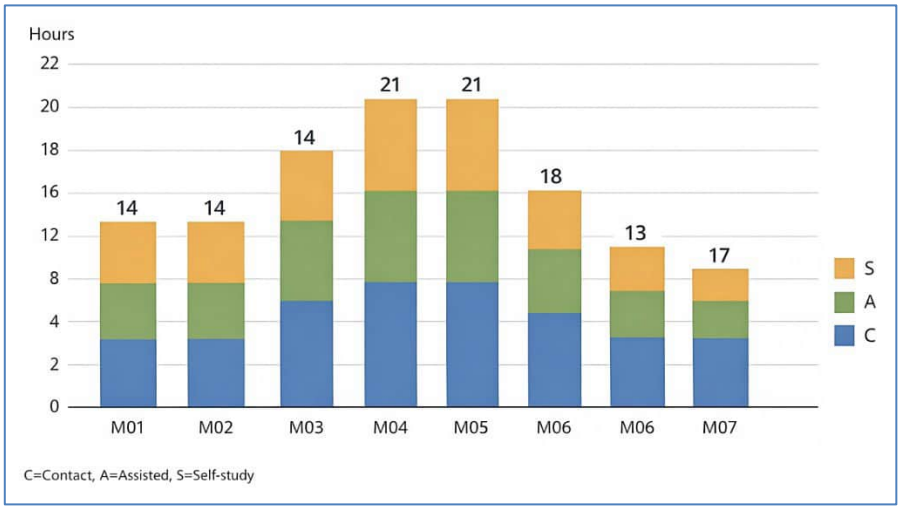


Figure 9. BSc workload distribution by module (CAS)

It shows the seven BSc modules (M01 - M07) in the recommended delivery order, with each module's total hours and the C/A/S split.

Module	Short code	C	A	S	T
M01 DEEP TECH AGRICULTURE	**01DTA**	**3**	**3**	**8**	**14**
M02 PROJECT MANAGEMENT AND INNOVATION	**02PMI**	**3**	**4**	**9**	**16**
M03 FUNDAMENTALS OF AI	**03AI - DTA**	**5**	**5**	**11**	**21**
M04 SENSOR TECHNOLOGY IN SMART AGRICULTURE	**04STSA**	**5**	**5**	**11**	**21**
M05 DATA COMPUTING FOR SMART AGRICULTURE	**05DCSA**	**4**	**4**	**10**	**18**
M06 BLOCKCHAIN TECHNOLOGY FOR AGRICULTURE	**06BTA**	**3**	**3**	**7**	**13**
M07 INTEGRATION FOR AGRICULTURE DEEP TECH	**07IADT**	**5**	**4**	**8**	**17**
TOTAL (programme)		**28**	**28**	**64**	**120**

Table 21. BSc workload summary by module (C/A/S/T hours)

The indicative schedule groups modules into delivery blocks that respect dependencies and support progression from context and planning to technical foundations and integration.

Delivery block	Modules included	Block focus	Hours (T)
Block 1	**M01, M02**	Sector context, technology choices, and project discipline for applied work	**30**
Block 2	**M04, M05**	Data capture and data computing foundations for reliable analysis and decisions	**39**
Block 3	**M03**	AI methods and applications applied to agri scenarios using the data foundations	**21**
Block 4	**M06**	Traceability and integrity concepts applied to auditable records and workflows	**13**
Block 5	**M07**	End - to - end integration task connecting sensing, data computing, AI, and traceability	**17**
TOTAL (programme)			**120**

Table 22. BSc indicative delivery blocks (order and rationale)

7.4. BSc assessment strategy

The BSc assessment strategy verifies **EQF 6** performance through applied, scenario - based evidence. Assessment is designed to show that learners can apply methods with increasing autonomy, analyse realistic agri - tech situations, and justify decisions using explicit criteria and documented assumptions. This reflects the competence scope defined in D2.1, expressed at **Bachelor** level as professional practice, structured reasoning, and accountable documentation.
Assessment evidence is structured using the common programme assessment components defined in Chapter 4 (P - AS - 1, P - AS - 2, P - AS - 3). The same component structure is used across modules (M01 - M07). BSc level expectations are expressed through task complexity, evidence standard, and decision defensibility.

7.4.1. Assessment components used at BSc level

At BSc level, assessment evidence is built around:

- **P - AS - 1 Technical Tasks** to verify correct execution of technical workflows and baseline methods.
- **P - AS - 2 Case and Reflection** to verify analysis and justified choices using explicit criteria.
- **P - AS - 3 Integration Mini - Project + Demo** in **M07** to verify end - to - end integration capability and coherent documentation.

Component	Role at BSc (EQF 6)	Minimum evidence standard at BSc
P - AS - 1 Technical Tasks	Proves learners can execute workflows and produce correct technical outputs.	Correct outputs plus short method notes (inputs, steps, checks).
P - AS - 2 Case and Reflection	Proves learners can analyse a scenario, apply criteria, and justify a decision with documented assumptions and constraints.	Clear scenario framing, stated criteria, justification linked to evidence, limitations stated.
P - AS - 3 Integration Mini - Project + Demo	Proves learners can integrate multiple elements into one coherent solution brief and workflow, with basic validation planning.	Coherent architecture/workflow, documented interfaces and data flow, validation plan, clear presentation of results.

Table 23. BSc assessment components and their role

7.4.2. Assessment coverage rules (module and programme)

Assessment must meet the following coverage rules:

1. **Outcome coverage (module level):** every module learning outcome (MLO) is assessed by at least one evidence item.
2. **Evidence - to - outcome traceability:** rubrics and checklists reference outcome codes (MLO codes) to show what is being verified.
3. **Programme coverage:** across all modules, the assessment set evidences all BSc programme learning outcomes (PLO - BSc - 01 to PLO - BSc - 09).
4. **Scope control:** tasks assess only what is stated in the curriculum outcomes and the agreed Topic scope.

7.4.3. Minimum assessment package per module (BSc)

Each module includes, at minimum:

- **One summative P - AS evidence item** aligned to the module outcomes, plus
- **At least one formative checkpoint** before final submission (draft review, coached clinic, peer review, or feedback quiz with feedback record).

Requirement	Minimum requirement (all modules M01 - M07)	Purpose
Summative evidence	At least one graded submission mapped to MLOs using P - AS categories	Verifies achievement of module learning outcomes
Formative checkpoint	At least one feedback point before final submission	Improves quality and supports consistent standards
Rubric/checklist	Outcome - referenced marking guide used by assessors	Ensures consistent marking and auditability
Authentication	Confirmation of learner authorship (oral check, supervised checkpoint, version history, or equivalent)	Reduces academic integrity risk in applied work

Table 24. Minimum BSc assessment package per module

M07 uses **P - AS - 3** as the main summative evidence item and is designed to consolidate learning from the earlier modules.

7.4.4. Marking, pass rules, and resubmission

- **Marking basis:** assessments are marked using rubrics/checklists that reference MLO codes and specify observable performance criteria.
- **Weighting:** module assessment weightings sum to **100%** at module level. Local providers set module weightings provided outcome coverage and alignment are preserved.
- **Pass threshold:** default module pass threshold is **50% (or 50/100)** unless the host institution requires a higher threshold.
- **Resubmission:** resubmissions follow host institutional rules and target the outcomes not yet achieved. Where feasible, reassessment uses a revised scenario or dataset while testing the same outcomes.

7.4.5. Feedback, moderation, and quality assurance

To support consistent standards across partners:

- **Feedback:** learners receive outcome - referenced feedback linked to the relevant MLO codes and clear improvement actions.
- **Internal moderation:** delivery teams moderate a sample of assessments to confirm rubric consistency and pass/fail decisions.

- **Recordkeeping:** assessment briefs, rubrics, submissions, marks, and feedback records are retained according to institutional policy, using stable naming based on module and outcome codes.

7.4.6. Reasonable adjustments and recognition of prior learning

- **Reasonable adjustments:** accessibility and reasonable adjustments follow host institutional policy and do not change the learning outcomes being assessed.
- **Recognition of prior learning (RPL):** where RPL is permitted, evidence presented for RPL maps to the same BSc learning outcomes and is judged using the same evidence standards.

7.4.7. End - of - programme Capstone Project requirement (BSc)

After completing all seven modules (M01 - M07), each learner must complete an individual **Capstone Project** using a standard template provided by the trainer. The Capstone Project is the programme - level consolidation task that confirms the learner can connect the curriculum elements into one coherent, end - to - end AgriTech workflow at **EQF 6**.
The **Capstone Project** is assessed under **P - AS - 3 (Integration Mini - Project + Demo)** and must demonstrate integrated application of learning from multiple modules. The project topic must be a realistic agricultural or agri - food use case (real or representative) with clear constraints, a defined workflow, and evidence of responsible practice in data handling, documentation, and traceability. BSc - level expectations include explicit criteria, justified design choices, and basic validation planning.

Template section	Minimum content required at BSc level (EQF 6)	Links to modules (examples)
Use case definition	Context, problem statement, objectives, scope boundaries, constraints, success criteria.	**M01, M02**
Stakeholders and roles	Stakeholder map, roles and responsibilities, basic assumptions on users/actors.	**M02**
Data and sensing plan	Data sources and sensing approach selection, sampling plan, data quality risks and checks.	**M04, M05**
Data handling workflow	Documented workflow for collection, cleaning, validation, storage; decision - ready outputs (tables/charts/maps/dashboard).	**M05**
AI - supported decision (where applicable)	Baseline AI approach or tool configuration; input features/assumptions; interpretation of outputs; limits and risks.	**M03**
Traceability / integrity step	Defined traceability events, actors, permissions; auditable record structure and integrity controls.	**M06**
End - to - end workflow and architecture	One - page workflow plus a simple architecture view (data flow and interfaces between components).	**M07**
Results and validation plan	Results summary plus validation approach (checks, metrics, test cases) and limitations.	**M03, M04, M05, M07**
Short reflection	Lessons learned, improvement actions, and trade - offs made with stated criteria.	**M02, M07**

Table 25. Minimum Capstone Project template sections (trainer - provided)

7.4.8. Minimum evidence package and assessment rules

- The learner submits the completed template plus required attachments (e.g., datasets used, configuration notes, tables/charts/maps, workflow/architecture diagrams, short validation notes).

- The learner provides a short demo or walkthrough (live or recorded) explaining the end - to - end workflow and key outputs.
- Marking uses a rubric that references the relevant outcomes (BSc PLOs and the mapped MLOs), focusing on: coherence of the integrated workflow, correctness of method application, explicit criteria and justification of choices, basic validation planning, and clarity and completeness of documentation.
- The Capstone Project is completed **after** all modules are finished. It may be scheduled as part of M07 delivery, but it must be treated as the **programme - level integration evidence** item.

8. BSC MODULE SET

This chapter presents the Bachelor level (**EQF 6**) module set for the AgriTech curriculum. It provides the recommended sequence and the BSc module snapshot cards used for delivery planning, assessment set - up, and consistent implementation across partners.
The BSc module set uses the fixed seven modules (**M01 - M07**). Topic titles (**T1 - T3**) remain exactly as agreed in the latest curriculum tables. At BSc level, learners are expected to work with greater autonomy than at VET level, apply methods in realistic agri - tech scenarios, and justify decisions using explicit criteria and documented assumptions.
The module interrelation logic remains the reference for sequencing and dependencies. The end state of the module set is readiness to complete the **BSc Capstone Project** (Section 7.4.7), which consolidates learning into an integrated workflow and solution brief assessed under P - AS - 3.

8.1. BSc module sequence and dependencies

The BSc programme follows a recommended sequence that respects learning dependencies and supports progressive competence building across the fixed module set (M01 - M07). The sequence is designed to ensure learners first establish sector context and project discipline, then build reliable sensing and data computing foundations, then apply AI methods and traceability logic, and finally integrate the full workflow in M07.
The module interrelation scheme included earlier in the deliverable is the reference for dependency logic.

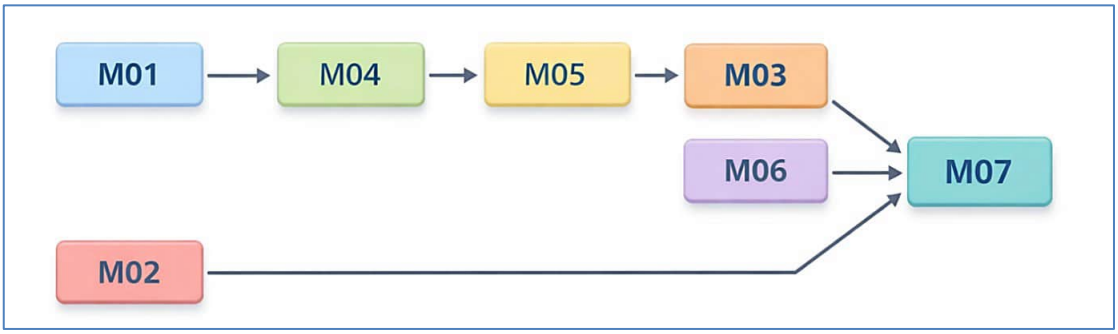


Figure 10. Module sequence and dependencies (common diagram VET+BSc+MSc)

It shows how M01 - M07 relate across the transversal/role core, technical core, trust/traceability layer, and integration/delivery layer, including the main dependency arrows that inform the BSc sequence.

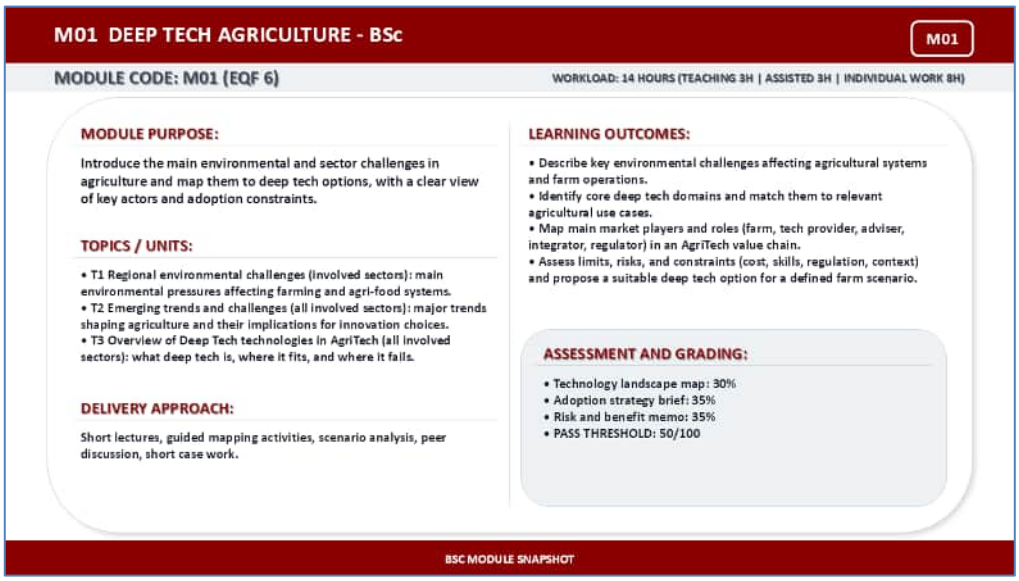
Module	Module title	BSc focus (what the learner can do at EQF 6 after the module)	Links to D2.1 competence emphasis (high - level)
M01	DEEP TECH AGRICULTURE	Analyse key agri challenges and evaluate deep - tech options and limitations for a defined use case using explicit criteria.	Sustainability and green competencies; digital/tech literacy in context

M02	PROJECT MANAGEMENT AND INNOVATION	Develop a pilot project plan (scope, stakeholders, workplan, resources, risks, monitoring indicators) and justify planning choices.	Business and entrepreneurial skills; soft skills and leadership (planning/communication)
M04	SENSOR TECHNOLOGY IN SMART AGRICULTURE	Select sensing approaches for a use case, define data quality checks, and interpret sensor data issues in context.	Technical and digital skills; sustainability (efficient monitoring)
M05	DATA COMPUTING FOR SMART AGRICULTURE	Build and document a data workflow to collect, clean, validate, structure, and summarise farm datasets for decisions.	Technical and digital skills; soft skills (documentation discipline)
M03	FUNDAMENTALS OF AI	Configure or develop a baseline AI approach for an agri use case and evaluate outputs and limitations using appropriate checks.	Technical and digital skills; responsible decision - making
M06	BLOCKCHAIN TECHNOLOGY FOR AGRICULTURE	Design a traceability workflow defining events, actors, permissions, and auditable record structures for a process.	Policy, regulation and compliance; technical/digital skills (integrity/traceability)
M07	INTEGRATION FOR AGRICULTURE DEEP TECH	Produce an integrated solution brief connecting sensing, data computing, AI, and traceability, including a simple architecture and validation plan.	Technical and digital skills; soft skills (integration communication); compliance awareness

Table 26. Recommended BSc module sequence and prerequisites

This sequence supports consistent delivery across partners while allowing flexibility in learning activities, tools, datasets, and local case contexts, provided that module codes, Topic titles, learning outcomes, and assessment evidence requirements remain unchanged.

8.2. BSc module snapshot cards



M02 PROJECT MANAGEMENT AND INNOVATION - BSc

M02

MODULE CODE: M02 (EQF 6)

WORKLOAD: 14 HOURS (TEACHING 3H | ASSISTED 3H | INDIVIDUAL WORK 8H)

MODULE PURPOSE:

Build practical project management skills for AgriTech innovation, from pilot design to decision checkpoints and impact evaluation.

TOPICS / UNITS:

- T1 Developing and implementing pilot projects in agriculture: pilot scope, roles, milestones, resources, risks.
- T2 Stage-gate control: structured decision points to approve, adapt, or stop a pilot.
- T3 Impact evaluation methods for AgriTech projects: logic models, indicators, baselines, evidence planning.

DELIVERY APPROACH:

Workshops, pilot planning templates, stage-gate role-play, peer review, guided writing of project artefacts.

LEARNING OUTCOMES:

- Develop a pilot project charter with clear scope, timeline, roles, budget logic, and risk controls.
- Apply a stage-gate approach to manage decisions across the pilot lifecycle using defined criteria.
- Build an impact evaluation plan using a logic model, indicators, and a basic baseline approach.
- Communicate progress and decisions using concise project documentation suitable for stakeholders.

ASSESSMENT AND GRADING:

- Project charter: 30%
- Stage-gate review memo: 35%
- Impact evaluation plan: 35%
- PASS THRESHOLD: 50/100

BSC MODULE SNAPSHOT

M03 FUNDAMENTALS OF AI - BSc

M03

MODULE CODE: M03 (EQF 6)

WORKLOAD: 21 HOURS (TEACHING 3H | ASSISTED 3H | INDIVIDUAL WORK 11H)

MODULE PURPOSE:

Equip learners to apply AI concepts and workflows to agricultural data and operational problems, with practical validation and responsible-use checks.

TOPICS / UNITS:

- T1 Advanced foundations of AI for Agri systems: AI workflow, data types, model types, evaluation basics.
- T2 AI applications in Deep Tech Agriculture (yield, vision, robotics, decision systems): where AI adds value and what data it needs.
- T3 Implementation, validation and best practices (case-based): applying AI to a scenario, testing performance, reporting limits.

DELIVERY APPROACH:

Interactive lectures, guided labs, case-based exercises, short reviews of outputs, structured feedback.

LEARNING OUTCOMES:

- Prepare an agricultural dataset for modelling by selecting features, handling quality issues, and documenting assumptions.
- Select an AI approach that fits a defined agricultural use case and justify the choice using data and constraints.
- Evaluate model performance using appropriate metrics and interpret results in an agriculture decision context.
- Produce a short implementation note describing workflow, validation results, limits, and responsible-use considerations.

ASSESSMENT AND GRADING:

- Interactive scenario: 40%
- Practical task: 35%
- Capstone contribution (module 2 component): 25%
- PASS THRESHOLD: 50/100

BSC MODULE SNAPSHOT

M04 SENSOR TECHNOLOGY IN SMART AGRICULTURE - BSc

M04

MODULE CODE: M04 (EQF 6)

WORKLOAD: 21 HOURS (TEACHING 3H | ASSISTED 3H | INDIVIDUAL WORK 11H)

MODULE PURPOSE:

Develop operational competence in selecting, deploying, and operating agricultural sensors, producing reliable data that can feed analytics and farm decision workflows.

TOPICS / UNITS:

- T1 Fundamentals of advanced agricultural sensors: sensor principles, measurement limits, accuracy and reliability.
- T2 Sensor types and applications in agriculture: matching sensor types to crops, soil, climate, livestock use cases.
- T3 Sensor operation and data transformation: placement, installation, calibration, maintenance, and transforming outputs into usable records.

DELIVERY APPROACH:

Demonstrations, guided labs, practical deployment exercises, structured reviews of configurations and outputs.

LEARNING OUTCOMES:

- Select appropriate sensors for a defined agricultural use case using range, accuracy, response time, and cost constraints.
- Design a basic sensor deployment plan including placement logic, calibration steps, and maintenance actions.
- Apply basic calibration and validation checks and identify field factors that degrade sensor performance.
- Transform sensor readings into decision-ready data records aligned with an agreed structure for downstream use.

ASSESSMENT AND GRADING:

- Design reviews, observed labs, configuration artefacts, schema validation checks, capstone demo evidence.
- Continuous assessment: 60% + Capstone project: 40%
- PASS THRESHOLD: 50/100

BSC MODULE SNAPSHOT

M05 DATA COMPUTING FOR SMART AGRICULTURE - BSc

M05

MODULE CODE: M05 (EQF 6)

WORKLOAD: 18 HOURS (TEACHING 4H | ASSISTED 4H | INDIVIDUAL WORK 10H)

MODULE PURPOSE:

Build the ability to acquire, clean, integrate, process, and visualise farm data to support decisions in smart agriculture.

TOPICS / UNITS:

- T1 Introduction to data computing (data acquisition, cleaning, and quality): sources, formats, cleaning rules, quality checks.
- T2 Applications of data computing in agriculture (data integration, data processing): combining datasets, processing steps, simple pipelines.
- T3 Visualization, dashboards, and decision support: turning data into KPIs, dashboards, and actionable insights.

DELIVERY APPROACH:

Mini-lectures with demos, guided labs using templates, short case tasks, peer feedback on dashboards.

LEARNING OUTCOMES:

- Collect and clean agricultural datasets by resolving missing values, duplicates, inconsistent formats, and invalid fields.
- Integrate at least two data sources into a single dataset aligned to a defined data structure and decision need.
- Build a basic processing workflow that generates usable indicators and quality-checked outputs.
- Create a dashboard or visual report that supports a specific farm decision using clearly defined KPIs.

ASSESSMENT AND GRADING:

- Mini-project (pipeline + dashboard + 1-page technical note): 40%
- Lab tasks (2): 30%
- Quiz: 20%
- Participation: 10%
- PASS THRESHOLD: 50/100

BSC MODULE SNAPSHOT

M06 BLOCKCHAIN TECHNOLOGY FOR AGRICULTURE - BSc

M06

MODULE CODE: M06 (EQF 6)

WORKLOAD: 21 HOURS (TEACHING 5H | ASSISTED 5H | INDIVIDUAL WORK 11H)

MODULE PURPOSE:

Build practical literacy in blockchain for agriculture, with emphasis on traceability, trust, shared records, access control, and realistic suitability checks.

TOPICS / UNITS:

- T1 Blockchain in agriculture: foundations and value propositions: core concepts, permissioned vs public, where blockchain fits.
- T2 Traceability, smart contracts, and access control: product passport logic, event logs, simple contract rules, roles and permissions.
- T3 Case studies and best practices: practical scenarios, design choices, common failure points.

DELIVERY APPROACH:

Short lectures, traceability demos, guided scenario tasks, group discussions, case analysis.

LEARNING OUTCOMES:

- Explain blockchain and distributed ledger concepts using correct terminology and simple process examples.
- Evaluate whether blockchain fits a given agricultural traceability problem using clear suitability criteria.
- Design a traceability record structure (events, evidence, roles) for a defined agri-food chain scenario.
- Propose access control and verification steps aligned with trust, data integrity, and governance needs.

ASSESSMENT AND GRADING:

- Scenario quiz: 25%
- Applied assignment: 40%
- Case brief: 35%
- PASS THRESHOLD: 50/100

BSC MODULE SNAPSHOT

M07 INTEGRATION FOR AGRICULTURE DEEP TECH - BSc

M07

MODULE CODE: M07 (EQF 6)

WORKLOAD: 17 HOURS (TEACHING 5H | ASSISTED 4H | INDIVIDUAL WORK 8H)

MODULE PURPOSE:

Build practical integration capability by connecting technologies and data flows across a smart agriculture system, with basic interoperability and impact evaluation discipline.

TOPICS / UNITS:

- T1 Integrating AI, blockchain, big data computing, and sensor technology in smart agriculture: how components interact from sensing to action to traceability.
- T2 Interoperability and data sharing challenges (all involved sectors): data ownership, privacy, integration barriers, stakeholder alignment.
- T3 Evaluating the impact of integrated Deep Tech solutions: judging performance, sustainability impact, and decision value.

DELIVERY APPROACH:

Online modules with guided study texts and quizzes, case analysis, practical exercises, final integration planning project.

LEARNING OUTCOMES:

- Map an end-to-end smart agriculture architecture linking sensors, data processing, AI decision outputs, and blockchain traceability.
- Identify interoperability barriers and propose practical data-sharing and interface approaches suitable for sector stakeholders.
- Design an integration plan for a selected agricultural problem, including data flows, roles, and operational constraints.
- Demonstrate a working API integration and document it with a simple threat model and test report.

ASSESSMENT AND GRADING:

- Quizzes: 40%
- Final project (integration plan): 60%

BSC MODULE SNAPSHOT

PART C. MSc CURRICULUM (EQF level 7)

9. MSc PROGRAMME SPECIFICATION

This chapter specifies the Master level (**EQF 7**) AgriTech curriculum in an implementation - ready format. It defines what learners are expected to achieve at MSc level, how the seven modules (M01 - M07) are structured for Master delivery, and how achievement is evidenced and assessed using the common programme assessment components (P - AS).

The MSc specification targets learners expected to operate with high autonomy and professional judgement in complex agri - tech contexts. Learning tasks require analysis of multi - constraint situations, evaluation of alternatives using explicit criteria, and design or integration choices that are defensible through documented assumptions, risks, and validation logic.

The MSc programme content and expected performance align with the AgriTech Manager competence framework defined in D2.1 and the controlled competence/role inputs used across the curriculum. D2.1 is used as the reference point for competence scope and expected role performance, while this chapter expresses those expectations as MSc - level learning outcomes, module/topic structure, workload, and assessable evidence requirements.

9.1. MSc entry profile and prerequisites

The MSc (**EQF 7**) programme is designed for learners who can work independently with complex information, make and defend decisions using explicit criteria, and produce rigorous documentation suitable for professional and organisational contexts. Typical entrants include graduates from agriculture and life sciences, agri - engineering, environmental systems, data science, computer science, food systems, or related disciplines.

The entry profile assumes learners can handle multi - constraint scenarios (technical, operational, economic, and compliance - related), evaluate alternative approaches, and justify design choices with evidence. In line with the competence scope described in D2.1, the MSc level targets advanced professional judgement, responsible governance, and integration of technical and organisational considerations.

Area	Minimum prerequisite (required)	Recommended (supports progression)
General education	Bachelor degree (or equivalent) in a relevant discipline, or recognition of prior learning (RPL) where applicable.	Prior study or work experience in agriculture, agri - food systems, sustainability, or digital innovation projects.
Mathematics and statistics	Ability to interpret statistical results and model performance measures; comfort with algebra and graphs.	Solid grounding in statistics (regression, classification metrics, validation concepts) and uncertainty interpretation.
Digital and data literacy	Confident use of digital tools and structured documentation.	Experience with data pipelines, version control habits, and reproducible workflow practices.
Programming	Ability to read and adapt basic scripts for data handling or analysis (language depends on provider).	Working proficiency in a programming language commonly used for data/AI (e.g., Python) and basic software engineering hygiene (testing, clear structure).

AI/ML foundations	Basic familiarity with AI/ML concepts and typical workflow steps (data, model, evaluation).	Prior hands - on exposure to training/evaluating models, feature engineering, or deploying AI outputs into a process.
Domain understanding	Basic understanding of agriculture/agri - food constraints (seasonality, variability, field conditions) or ability to acquire this quickly.	Familiarity with farm operations, sensing contexts, or agri - tech solutions and their adoption constraints.
Governance and compliance	Ability to follow data protection and ethics requirements under institutional rules.	Familiarity with data governance concepts (access control, documentation, risk reasoning, audit trails).
Language	Ability to read technical material and write structured reports in the delivery language.	Ability to produce concise professional documentation suitable for external review.
Equipment access	Access to a suitable device and stable internet; ability to use required software platforms.	Ability to run standard data/AI tools locally or via institutional environments (virtual labs/cloud platforms).

Table 27. MSc entry requirements and prerequisites

Where learner starting points vary, providers may offer optional preparatory support (e.g., statistics refresh, programming primer, baseline ML recap, and documentation standards). These supports do not change the agreed module catalogue, Topic titles, learning outcomes, or assessment evidence requirements.

9.2. MSc programme learning outcomes (PLOs) with Bloom tags

The MSc programme learning outcomes define the minimum expected learner achievement at **EQF 7** across the full module set (M01 - M07). They are written as measurable performance claims and tagged using the agreed Bloom notation (R/U/A/An/E/C). The outcomes reflect the competence scope described in D2.1, expressed at Master level as advanced analysis, criteria - based evaluation, and defensible design and integration decisions in complex agri - tech contexts.

PLO code	MSc programme learning outcome (EQF 7)	Bloom tag
PLO - MSc - 01	Evaluate sustainability, regulatory, and operational pressures in an agri - food context and design a technology - supported response plan with priorities, KPIs, and governance roles.	**C**
PLO - MSc - 02	Critically evaluate deep tech options across major domains for a selected use case and justify a technology portfolio decision using explicit feasibility, cost, risk, and sustainability criteria.	**E**
PLO - MSc - 03	Design and govern an AgriTech pilot or innovation initiative end - to - end, including stage - gate decisions, risk controls, resource planning, and an evaluation approach aligned to intended outcomes.	**C**
PLO - MSc - 04	Architect a data management and computing workflow for multi - source agricultural data (collection, quality control, integration, storage, access rules, and documentation) suitable for reproducible analysis and decision support.	**C**

PLO - MSc - 05	Design a sensing strategy and deployment plan for a complex agricultural scenario, including calibration, validation, and data quality assurance, and justify design choices under field constraints.	**C**
PLO - MSc - 06	Develop or configure an advanced AI approach for an agri use case and evaluate model performance, robustness, bias, and uncertainty, including clear limitations for deployment decisions.	**E**
PLO - MSc - 07	Design an auditable traceability and integrity workflow for an agri - food process, including event models, actor permissions, and smart - contract logic where appropriate, aligned to compliance needs.	**C**
PLO - MSc - 08	Evaluate data protection, cybersecurity, ethical, and governance risks in an AgriTech system and specify proportionate controls, documentation, and monitoring actions.	**E**
PLO - MSc - 09	Produce an integrated system architecture and deployment plan connecting sensing, data computing, AI - supported decisions, and traceability, including validation, monitoring, and improvement actions.	**C**

Table 28. MSc programme learning outcomes (PLOs) with Bloom tags

9.3. MSc workload and schedule summary

The MSc programme workload is reported using the common categories defined in Chapter 4: **C** (Teaching/Contact), **A** (Assisted practice), **S** (Individual work/Self - study), and **T** (Total). Hours are stated per module using the fixed module codes (M01 - M07) to support traceability and consistent delivery planning across partners.

The MSc workload supports **EQF 7** expectations aligned to the competence scope in D2.1. Learners work with high autonomy, apply advanced judgement, and produce rigorous documentation and validation logic in complex agri - tech scenarios. Workload allocation balances teaching input with assisted practice and substantial independent work to produce assessable outputs.

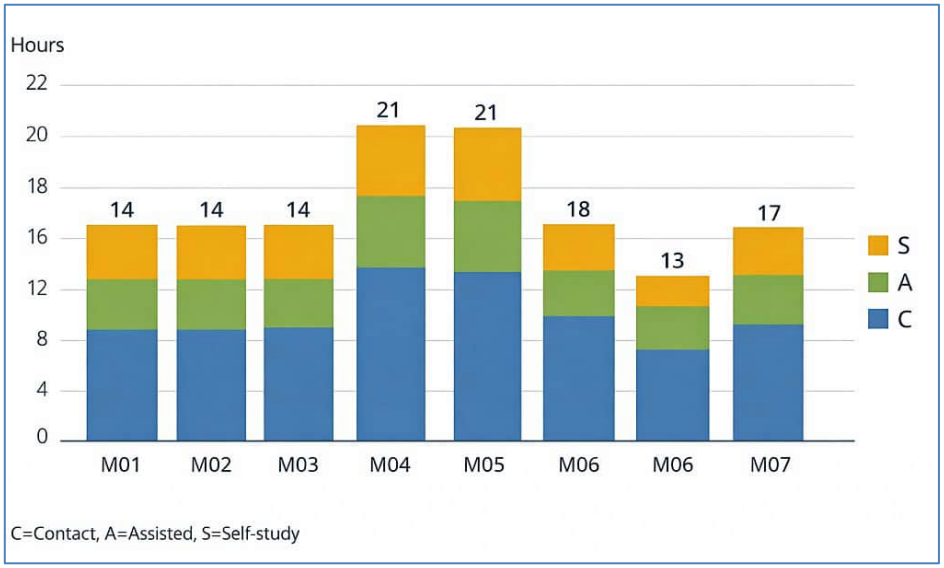


Figure 11. MSc workload distribution by module (CAS)

It shows the seven MSc modules (M01 - M07) in the recommended delivery order, with each module's total hours and the C/A/S split.

Module	Short code	C	A	S	T
M01 DEEP TECH AGRICULTURE	**01DTA**	**3**	**3**	**8**	**14**
M02 PROJECT MANAGEMENT AND INNOVATION	**02PMI**	**3**	**4**	**9**	**16**
M03 FUNDAMENTALS OF AI	**03AI - DTA**	**5**	**5**	**11**	**21**
M04 SENSOR TECHNOLOGY IN SMART AGRICULTURE	**04STSA**	**5**	**5**	**11**	**21**
M05 DATA COMPUTING FOR SMART AGRICULTURE	**05DCSA**	**4**	**4**	**10**	**18**
M06 BLOCKCHAIN TECHNOLOGY FOR AGRICULTURE	**06BTA**	**3**	**3**	**7**	**13**
M07 INTEGRATION FOR AGRICULTURE DEEP TECH	**07IADT**	**5**	**4**	**8**	**17**
TOTAL (programme)		**28**	**28**	**64**	**120**

Table 29. MSc workload summary by module (C/A/S/T hours)

The indicative schedule groups modules into delivery blocks that respect dependencies and support progression from context and governance to technical foundations and end - to - end integration.

Delivery block	Modules included	Block focus	Hours (T)
Block 1	**M01, M02**	Sector context, strategic technology choices, and project governance discipline	**30**
Block 2	**M04, M05**	Sensing strategy plus data computing architecture and quality control foundations	**39**
Block 3	**M03**	Advanced AI application and evaluation in context using the data foundations	**21**
Block 4	**M06**	Traceability and integrity design for auditable records and compliance contexts	**13**
Block 5	**M07**	End - to - end integration across sensing, data computing, AI, and traceability	**17**
TOTAL (programme)			**120**

Table 30. MSc indicative delivery blocks (order and rationale)

9.4. MSc assessment strategy

The MSc assessment strategy verifies **EQF 7** performance through advanced, scenario - based evidence. Assessment is designed to show that learners can analyse complex agri - tech situations, evaluate alternatives using explicit criteria, and make defensible design and integration decisions supported by documented assumptions, risks, and validation logic. This reflects the competence scope defined in D2.1, expressed at **Master** level as high autonomy, professional judgement, and governance - aware delivery.

Assessment evidence is structured using the common programme assessment components defined in Chapter 4 (P - AS - 1, P - AS - 2, P - AS - 3). The same component structure is used across modules (M01 - M07). MSc level expectations are expressed through evidence quality, decision defensibility, and the requirement to justify design choices and controls.

9.4.1. Assessment components used at MSc level

At MSc level, assessment evidence is built around:

- **P - AS - 1 Technical Tasks** to verify correct execution of advanced workflows and disciplined technical outputs (including quality checks and documentation).
- **P - AS - 2 Case and Reflection** to verify criteria - based evaluation, trade - off decisions, and governance - aware reasoning.
- **P - AS - 3 Integration Mini - Project + Demo** in **M07** to verify end - to - end integration capability, including validation and monitoring logic.

Component	Role at MSc (EQF 7)	Minimum evidence standard at MSc
P - AS - 1 Technical Tasks	Proves learners can execute advanced workflows and produce reproducible technical outputs.	Correct outputs plus documented assumptions, quality checks, and method notes suitable for review.
P - AS - 2 Case and Reflection	Proves learners can evaluate options using explicit criteria and defend choices under constraints (technical, operational, compliance).	Explicit criteria and trade - offs, risk reasoning, governance implications, and clear limitations stated.
P - AS - 3 Integration Mini - Project + Demo	Proves learners can design and document an integrated solution approach with validation and monitoring logic.	Coherent architecture and interfaces, evidence of integration planning, validation approach, monitoring and improvement actions.

Table 31. MSc assessment components and their role

9.4.2. Assessment coverage rules (module and programme)

Assessment must meet the following coverage rules:

1. **Outcome coverage (module level):** every module learning outcome (MLO) is assessed by at least one evidence item.
2. **Evidence - to - outcome traceability:** rubrics and checklists reference outcome codes (MLO codes) to show what is being verified.
3. **Programme coverage:** across all modules, the assessment set evidences all MSc programme learning outcomes (PLO - MSc - 01 to PLO - MSc - 09).
4. **Scope control:** tasks assess only what is stated in the curriculum outcomes and the agreed Topic scope.

9.4.3. Minimum assessment package per module (MSc)

Each module includes, at minimum:

- **One summative P - AS evidence item** aligned to the module outcomes, plus
- **At least one formative checkpoint** before final submission (design review, coached clinic, peer review, or structured feedback checkpoint).

Requirement	Minimum requirement (all modules M01 - M07)	Purpose
Summative evidence	At least one graded submission mapped to MLOs using P - AS categories	Verifies achievement of module learning outcomes
Formative checkpoint	At least one structured feedback point before final submission	Improves evidence quality and supports consistent standards
Rubric/checklist	Outcome - referenced marking guide used by assessors	Ensures consistent marking and auditability
Authentication	Confirmation of learner authorship (oral defence/check, supervised checkpoint, version history, or equivalent)	Reduces academic integrity risk in complex applied work

Table 32. Minimum MSc assessment package per module

M07 uses **P - AS - 3** as the main summative evidence item and is designed to consolidate learning from the earlier modules.

9.4.4. Marking, pass rules, and resubmission

- **Marking basis:** assessments are marked using rubrics/checklists that reference MLO codes and specify observable performance criteria, including decision defensibility and documentation quality where relevant.
- **Weighting:** module assessment weightings sum to **100%** at module level. Local providers set module weightings provided outcome coverage and alignment are preserved.
- **Pass threshold:** default module pass threshold is **50% (or 50/100)** unless the host institution requires a higher threshold.
- **Resubmission:** resubmissions follow host institutional rules and target the outcomes not yet achieved. Where feasible, reassessment uses a revised scenario, dataset, or constraints while testing the same outcomes.

9.4.5. Feedback, moderation, and quality assurance

To support consistent standards across partners:

- **Feedback:** learners receive outcome - referenced feedback linked to the relevant MLO codes and clear improvement actions, including documentation and validation improvements where needed.
- **Internal moderation:** delivery teams moderate a sample of assessments to confirm rubric consistency and comparability of pass/fail decisions, with attention to judgement - based marking.
- **Recordkeeping:** assessment briefs, rubrics, submissions, marks, feedback records, and (where applicable) short defence records are retained according to institutional policy, using stable naming based on module and outcome codes.

9.4.6. Reasonable adjustments and recognition of prior learning

- **Reasonable adjustments:** accessibility and reasonable adjustments follow host institutional policy and do not change the learning outcomes being assessed.
- **Recognition of prior learning (RPL):** where RPL is permitted, evidence presented for RPL maps to the same MSc learning outcomes and is judged using the same evidence standards.

9.4.7. End - of - programme Capstone Project requirement (MSc)

After completing all seven modules (M01 - M07), each learner must complete an individual **Capstone Project** using a standard template provided by the trainer. The Capstone Project is the programme - level consolidation task that confirms the learner can connect the curriculum elements into one coherent, end - to - end AgriTech system concept at **EQF 7**, including defended design choices, governance considerations, and validation planning.
The **Capstone Project** is assessed under **P - AS - 3 (Integration Mini - Project + Demo)** and must demonstrate integrated application of learning from multiple modules. The project topic must be a complex agricultural or agri - food use case (real or representative) with explicit constraints, defined stakeholders, documented assumptions, and an auditable workflow covering sensing, data computing, AI - supported decision steps, and traceability/integrity.

Template section	Minimum content required at MSc level (EQF 7)	Links to modules (examples)
Use case definition and problem framing	Context, problem statement, objectives, scope boundaries, constraints, success criteria, and key risks.	**M01, M02**

Stakeholders, governance, and roles	Stakeholder map, governance roles, decision rights, responsibilities, and operating assumptions.	**M02**
Sensing strategy and deployment plan	Sensing design, calibration/validation approach, quality assurance plan, field constraints and mitigation actions.	**M04**
Data architecture and computing workflow	Multi - source data workflow and architecture (integration, storage, access rules, documentation, reproducibility approach).	**M05**
AI approach and evaluation plan	Model or method choice rationale, evaluation metrics, robustness considerations, bias/uncertainty notes, deployment constraints.	**M03**
Traceability and integrity design	Event model, actor permissions, integrity controls, audit trail structure, compliance linkage, smart - contract logic where appropriate.	**M06**
End - to - end system architecture and integration plan	Architecture view (components, interfaces, data flow), interoperability assumptions, integration risks and mitigations.	**M07**
Validation, monitoring, and improvement	Validation plan (tests, metrics, acceptance criteria), monitoring approach, improvement actions and triggers.	**M03, M04, M05, M07**
Reflection and defended trade - offs	Explicit trade - offs made, criteria used, limitations, and improvement roadmap.	**M02, M07**

Table 33. Table 9 - 7. Minimum Capstone Project template sections (trainer - provided)

9.4.8. Minimum evidence package and assessment rules

- The learner submits the completed template plus required attachments (architecture/workflow diagrams, datasets or dataset description, configuration notes, evaluation and validation notes, and supporting artefacts).
- The learner provides a short demo or walkthrough (live or recorded) and a brief defence of key design choices and trade - offs.
- Marking uses a rubric that references the relevant outcomes (MSc PLOs and the mapped MLOs), focusing on: coherence of the integrated design, defended trade - offs using explicit criteria, governance and risk reasoning, validation and monitoring logic, and clarity and completeness of documentation.
- The Capstone Project is completed **after** all modules are finished. It may be scheduled as part of M07 delivery, but it must be treated as the **programme - level integration evidence** item.

10. MSc MODULE SET

This chapter presents the Master level (**EQF 7**) module set for the AgriTech curriculum. It provides the recommended sequence and the MSc module snapshot cards used for delivery planning, assessment set - up, and consistent implementation across partners.
The MSc module set uses the fixed seven modules (**M01 - M07**). Topic titles (**T1 - T3**) remain exactly as agreed in the latest curriculum tables. At MSc level, learners are expected to operate with high autonomy, apply advanced judgement, and produce defensible design and integration outputs supported by explicit criteria, risk reasoning, and validation logic.
The module interrelation logic remains the reference for sequencing and dependencies. The end state of the module set is readiness to complete the **MSc Capstone Project** (Section 9.4.7), which consolidates learning into an integrated system architecture and deployment plan assessed under P - AS - 3.

10.1. MSc module sequence and dependencies

The MSc programme follows the dependency logic shown in the module interrelation scheme. The recommended sequence supports progressive capability building from sector context and governance discipline to sensing strategy and data architecture, then advanced AI evaluation and traceability design, and finally end - to - end integration in M07.

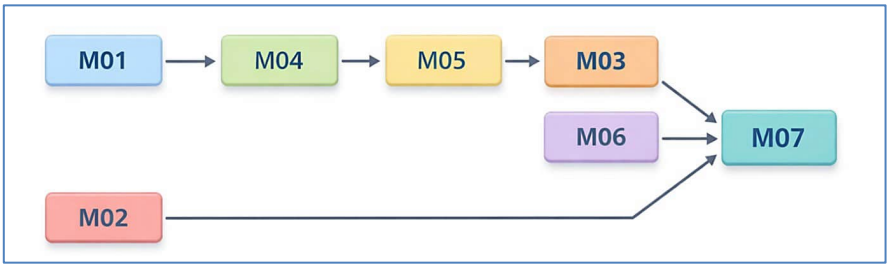


Figure 12. Module sequence and dependencies (common diagram VET+BSc+MSc)

It shows how M01 - M07 relate across the transversal/role core, technical core, trust/traceability layer, and integration/delivery layer, including the dependency arrows used to set the MSc sequence.

Module	Module title	MSc focus (what the learner can do at EQF 7 after the module)	Links to D2.1 competence emphasis (high - level)
M01	DEEP TECH AGRICULTURE	Evaluate sustainability, regulatory, and operational pressures and frame a governance - aware response for a complex use case.	Sustainability and green competencies; policy, regulation and compliance; strategic judgement
M02	PROJECT MANAGEMENT AND INNOVATION	Design and govern an innovation initiative end - to - end, including stage - gates, risk controls, resourcing, and evaluation logic.	Business and entrepreneurial skills; soft skills and leadership; governance discipline
M04	SENSOR TECHNOLOGY IN	Design a sensing strategy and deployment plan with calibration,	Technical and digital skills; sustainability (resource -

	SMART AGRICULTURE	validation, and quality assurance under field constraints.	efficient monitoring); risk - aware practice
M05	DATA COMPUTING FOR SMART AGRICULTURE	Architect a multi - source data workflow (integration, storage, access rules, documentation, reproducibility) for decision support.	Technical and digital skills; policy/compliance (data governance); documentation discipline
M03	FUNDAMENTALS OF AI	Develop or configure an AI approach and evaluate robustness, bias, uncertainty, and deployment limits using explicit criteria.	Technical and digital skills; responsible decision - making; risk and quality reasoning
M06	BLOCKCHAIN TECHNOLOGY FOR AGRICULTURE	Design an auditable traceability and integrity workflow aligned to compliance needs, including permissions and smart - contract logic where appropriate.	Policy, regulation and compliance; technical/digital skills (integrity/traceability); governance
M07	INTEGRATION FOR AGRICULTURE DEEP TECH	Produce an integrated architecture and deployment plan connecting sensing, data computing, AI, and traceability, including validation, monitoring, and improvement actions.	Integration competence; governance and compliance; communication and leadership in complex systems

Table 34. MSc module set overview, sequence, and links to D2.1

This sequence supports consistent delivery across partners while allowing flexibility in learning activities, tools, datasets, and local case contexts, provided that module codes, topic titles, learning outcomes, and assessment evidence requirements remain unchanged.

10.2. MSc module snapshot cards

M02 PROJECT MANAGEMENT AND INNOVATION - MSc

M02

Module code: 02PMI (EQF 7)

Workload: 14h (Teaching 3h; Assisted 3h; Individual work 8h)

Snapshot:

Learners design and govern one agriculture pilot from concept to evaluation, using stage-gate control, risk management, and an applied impact evaluation plan that supports scale-up decisions.

Topics/units:

- Topic 1: Developing and implementing pilot projects in agriculture
- Topic 2: Stage-gate control for a single agri pilot
- Topic 3: Impact evaluation methods (applied evaluation plan)

Key learning outcomes:

LO1	Produce a complete pilot package (problem framing, evidence summary, pilot protocol, feasibility, stakeholder plan, workplan, success criteria).
LO2	Run stage-gate reviews using explicit criteria, risk controls, and uncertainty checks, and maintain a decision log.
LO3	Design an applied impact evaluation plan (theory of change, indicators, baseline/follow-up, data quality checks, analysis outline, scale-up criteria).
LO4	Write a decision memo that recommends continue/rescope/pause/stop based on evidence and feasibility.

Assessment evidence and pass rule:

- Interactive scenario (40%)
- Practical task (35%)
- Capstone contribution, Module 2 component (25%)

Pass threshold 50%

Teaching and learning approach: Expert-led seminars/masterclasses; critical case analysis; simulation-based exercises; supervised research assignments.

M03 FUNDAMENTALS OF AI - MSc

M03

Module code: 03AI-DTA (EQF 7)

Workload: 21h (Teaching 5h; Assisted 5h; Individual work 11h)

Snapshot:

Learners move from selecting AI methods to building governed datasets, implementing advanced models, and preparing deployment and monitoring plans suitable for real agri systems.

Topics/units:

- Topic 1: Advanced AI methods & data engineering for agri systems
- Topic 2: Advanced AI applications (yield, vision, robotics, decision systems)
- Topic 3: Deployment, validation & governance (case-based)

Key learning outcomes:

LO1	Critically compare advanced AI approaches for an agri case and justify method choice, metrics, and limitations.
LO2	Build a governed dataset pipeline for multi-source agri data (cleaning, labelling, versioning, documentation, bias checks).
LO3	Implement and evaluate an advanced model (e.g., deep learning or ensemble) and report performance, uncertainty, and explainability.
LO4	Produce a deployment and monitoring plan (integration into operations, privacy, safety, drift monitoring, performance checks).

Assessment evidence and pass rule:

- Interactive scenario (40%)
- Applied brief or practical task (35%)
- Capstone contribution, Module 3 component (25%)

Pass threshold 50%

Teaching and learning approach: Short lectures; seminars; labs; design studios; case clinics; peer critique; scenario-based simulations.

M03 FUNDAMENTALS OF AI - MSc

M03

Module code: 03AI-DTA (EQF 7)

Workload: 21h (Teaching 5h; Assisted 5h; Individual work 11h)

Snapshot:

Learners move from selecting AI methods to building governed datasets, implementing advanced models, and preparing deployment and monitoring plans suitable for real agri systems.

Topics/units:

- Topic 1: Advanced AI methods & data engineering for agri systems
- Topic 2: Advanced AI applications (yield, vision, robotics, decision systems)
- Topic 3: Deployment, validation & governance (case-based)

Key learning outcomes:

LO1	Critically compare advanced AI approaches for an agri case and justify method choice, metrics, and limitations.
LO2	Build a governed dataset pipeline for multi-source agri data (cleaning, labelling, versioning, documentation, bias checks).
LO3	Implement and evaluate an advanced model (e.g., deep learning or ensemble) and report performance, uncertainty, and explainability.
LO4	Produce a deployment and monitoring plan (integration into operations, privacy, safety, drift monitoring, performance checks).

Assessment evidence and pass rule:

- Interactive scenario (40%)
- Applied brief or practical task (35%)
- Capstone contribution, Module 3 component (25%)

Pass threshold 50%

Teaching and learning approach: Short lectures; seminars; labs; design studios; case clinics; peer critique; scenario-based simulations.

M05 DATA COMPUTING FOR SMART AGRICULTURE - MSc

M05

Module code: 05DCSA (EQF 7) | **Workload: 18h (Teaching 4h; Assisted 4h; Individual work 10h)**

Snapshot:

Learners architect data-centric smart agriculture systems, focusing on integration, data spaces and AI strategy, digital twin concepts, and cybersecurity controls that keep operations reliable.

Topics/units:

- Topic 1: Advanced data acquisition & system integration
- Topic 2: Data spaces & artificial intelligence strategy
- Topic 3: Digital twin & cybersecurity

Key learning outcomes:

- LO1: Design an integrated data pipeline that connects acquisition, integration, storage, and analytics for a smart agriculture system.
- LO2: Define a data space and AI strategy (governance roles, access rules, data sharing principles, operational use).
- LO3: Produce a digital twin concept for a selected agri system (key data sources, model scope, validation approach).
- LO4: Specify cybersecurity controls and monitoring practices for smart agriculture data infrastructure (risk-driven, operationally realistic).

Assessment evidence and pass rule:

- Capstone case study (45%)
- Two lab assignments (25% total)
- Participation and peer feedback (10%)

Pass ≥ 50%

Teaching and learning approach: Micro-lectures and live demos; guided labs; case-driven clinics; mini design sprint for the capstone.

M06 BLOCKCHAIN TECHNOLOGY FOR AGRICULTURE - MSc

M06

Module code: 06BTA (EQF 7) | **Workload: 13h (Teaching 3h; Assisted 3h; Individual work 7h)**

Snapshot:

Learners design blockchain-enabled architectures for agriculture, define governance and token logic, and plan convergence with IoT and AI for end-to-end traceability and trusted data exchange.

Topics/units:

- Topic 1: Blockchain in agriculture: supply chain traceability, smart contracts, decentralized marketplaces
- Topic 2: Blockchain governance & tokenomics
- Topic 3: The convergence: IoT, AI & blockchain integration

Key learning outcomes:

- LO1: Design a blockchain-based architecture for an agriculture use case using privacy-preserving techniques.
- LO2: Draft governance rules and consortium agreements that support participation, compliance, and accountability.
- LO3: Create a convergence roadmap that combines IoT, blockchain, and AI for scalable, auditable solutions.

Assessment evidence and pass rule:

- Capstone project (100%)
- Pass ≥ 50%
- Supporting work: two lab assignments, one quiz, participation/peer feedback (formative)

Teaching and learning approach: Short lectures; live demos; guided hands-on lab work in small teams; case discussion; coaching for capstone output.

M07 INTEGRATION FOR AGRICULTURE DEEP TECH - MSc

M07

Module code: 07IADT (EQF 7) | **Workload: 17h (Teaching 5h; Assisted 4h; Individual work 8h)**

Snapshot:

Learners lead end-to-end integration across the agri-tech stack, apply interoperability standards, and design practical data sharing arrangements for cross-actor ecosystems.

Topics/units:

- Topic 1: Integrating AI, blockchain, big data, and sensor technology in smart agriculture
- Topic 2: Interoperability standards (ISOBUS, AgGateway, GS1)
- Topic 3: Data marketplaces & sharing agreements

Key learning outcomes:

- LO1: Design an end-to-end integration architecture combining sensors, data platforms, AI services, and blockchain where appropriate.
- LO2: Apply interoperability standards to specify interfaces, data models, and integration patterns across vendors and systems.
- LO3: Draft data sharing and marketplace arrangements (roles, access rights, governance rules, compliance considerations).
- LO4: Deliver an integration capstone plan that is implementable and defensible (scope, architecture, risks, and operating model).

Assessment evidence and pass rule:

- Topic quizzes (40%)
- Final capstone project (60%)

Pass threshold: not stated in the draft

Teaching and learning approach: Lectures; case analysis; practical system design exercises; expert interviews.

11. CROSS - LEVEL CONSISTENCY AND PROGRESSION CHECKS

This chapter verifies that the curriculum is coherent across the three levels (**VET EQF 5**, **BSc EQF 6**, **MSc EQF 7**) while keeping the same seven-module structure (**M01–M07**). It checks that terminology, module purposes, topic titles, and the linked **P-AS** components are applied consistently, and that each level remains clearly distinct in depth, complexity, and expected performance.

Progression is checked by confirming that learning expectations increase level by level, including **Bloom-tagged Module Learning Outcomes** (**MLOs**), the sophistication of tasks and evidence required, and the balance of contact/assisted/self-study/total hours (**C/A/S/T**). It also confirms that assessment approaches scale appropriately across levels (*evidence type*, *weighting*, and *pass rules*) without changing the underlying module intent.

The outputs of these checks are presented to support pilot testing and review. Any issues identified are treated as pilot-phase adjustments (e.g., wording clarity, workload balance, overlap or gaps between topics), without introducing new modules, new topics, or additional alignment matrices.

11.1. Same - module progression map (VET → BSc → MSc) at module outcome level

This section checks that each module keeps the same intent across VET, BSc, and MSc, while the expected performance moves upward in a controlled way. The progression is reviewed at Module Learning Outcome (MLO) level, using Bloom tags to confirm a clear step-up in cognitive demand and task complexity.

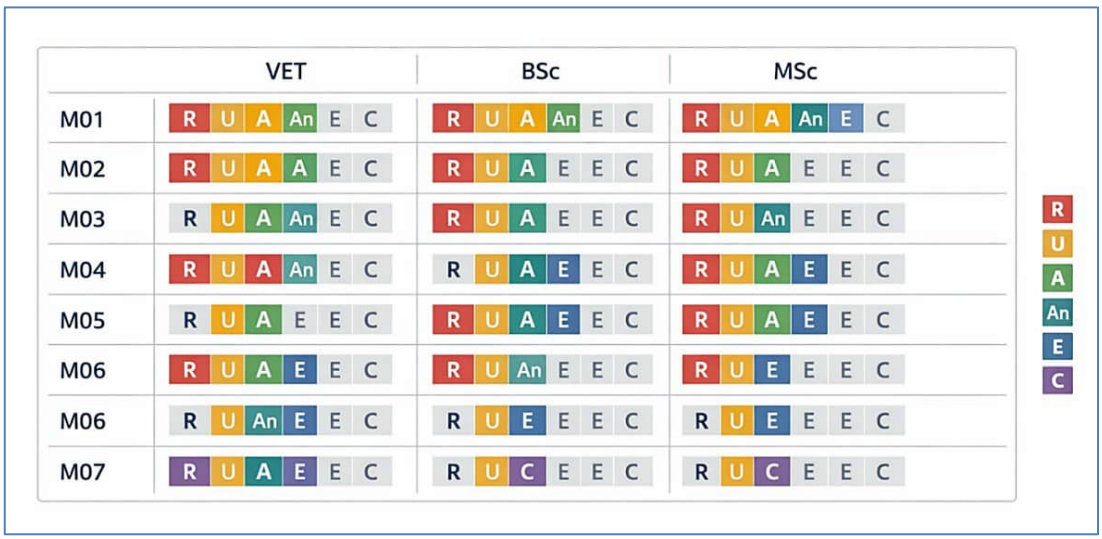


Figure 13. Cross - level progression overview (module - outcome level)

Progression rule applied (per module, across levels):

- **VET (EQF 5):** explain and apply core concepts in guided, practical tasks; produce simple, usable outputs.

- **BSc (EQF 6):** apply methods with justified choices; integrate data/tools; produce complete technical or project artefacts with traceable decisions.
- **MSc (EQF 7):** evaluate alternatives, manage uncertainty and trade-offs, and justify decisions in complex or ambiguous cases; produce defensible deliverables aligned to governance, impact, and deployment constraints.

How the map (Figure 12) is read:

- For each **module (M01–M07)**, the map aligns the three sets of MLOs (VET → BSc → MSc) to show continuity of scope.
- Bloom tags are used to confirm that outcomes move from lower to higher-order actions (e.g., describe/apply → analyse/design → evaluate/optimise/justify), without changing the module's topic structure.
- The map also highlights where the **assessment evidence** increases in sophistication across levels (e.g., worksheet or short report → structured technical report/project package → defended design choices and validation evidence).
- Where the module contributes to the programme capstone at MSc level, the map shows the connection at outcome level without repeating the capstone template (refer to **P-AS-3 Capstone Project requirement**).

Consistency checks applied to each module:

- **Scope lock:** the same core skill domain is retained from VET to MSc (no topic drift, no new topic titles introduced).
- **Evidence escalation:** outputs remain comparable in type, but increase in completeness, rigour, and justification.
- **Language and terms:** the same key terms and P-AS component labels are used at all three levels.
- **No duplication across modules:** higher-level outcomes do not repeat the same action at the same depth in adjacent modules; overlaps are limited to necessary prerequisites.

Result summary (what Figure 12 demonstrates):

- All seven modules show a visible step-up from **doing with guidance (VET)** to **doing with justified method choices (BSc)** to **doing with evaluation, constraints, and defensible decisions (MSc)**.
- The progression is continuous, meaning learners can move between levels without gaps or repeated "same-level" outcomes.
- MSc outcomes remain aligned to programme-level expectations, including the contribution of selected modules to the **end-of-programme Capstone Project under P-AS-3** (referenced only).

11.2. Bloom progression check

This section verifies that the Bloom tags assigned to **Module Learning Outcomes (MLOs)** progress consistently from **VET (EQF 5)** to **BSc (EQF 6)** to **MSc (EQF 7)**, in line with the intended increase in cognitive demand and performance expectations.

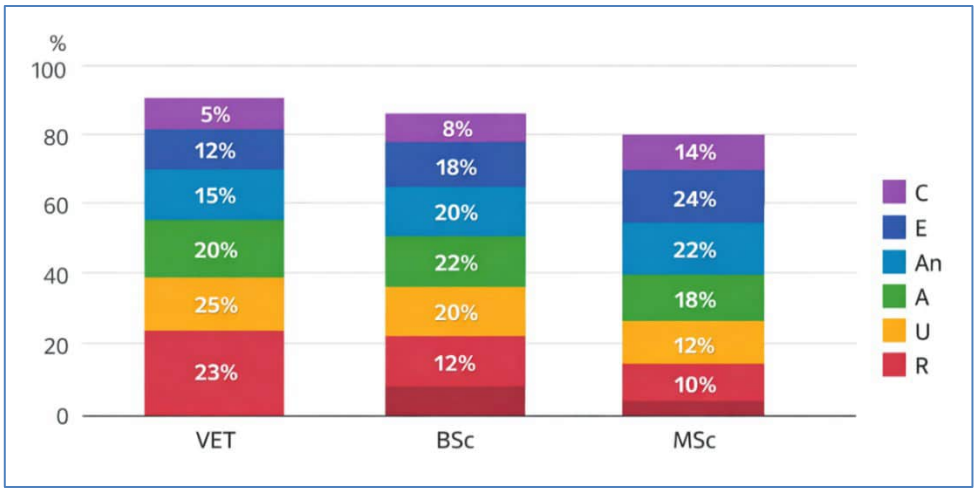


Figure 14. Cross - level progression overview (Bloom progression)

The figure shows the distribution of Bloom-tagged MLOs across the three levels, confirming an upward shift from lower-order to higher-order outcomes.

Expected Bloom profile by level

- **VET (EQF 5):** outcomes mainly at Remember, Understand, and Apply, with limited Analyse used only where needed for basic troubleshooting and simple comparisons.
- **BSc (EQF 6):** outcomes mainly at Apply and Analyse, with selected Evaluate and Create where learners design or integrate solutions and justify choices.
- **MSc (EQF 7):** outcomes mainly at Analyse, Evaluate, and Create, including explicit justification of trade-offs, validation decisions, and evidence-based optimisation in complex contexts.

Checks applied

- **Vertical progression within each module (M01–M07):** for the same module, Bloom tags do not remain flat across levels; at least one clear step-up is present from VET → BSc → MSc.
- **Level appropriateness:** outcomes tagged Evaluate/Create are not concentrated at VET level; VET outcomes do not rely on Analyse/Evaluate to define basic competence.
- **Balance across the full programme:** the overall tag distribution shifts upward by level, rather than being driven by one or two modules.
- **Assessment match:** assessment evidence at each level can credibly demonstrate the Bloom-tagged outcomes assigned (e.g., worksheets for Apply; structured reports for Analyse; defended decisions and validation evidence for Evaluate/Create).

Outcome of the Bloom check (as shown in Figure 13)

- **(VET):** outcomes are predominantly operational and guided, demonstrated through simple applied tasks and clear artefacts.
- **(BSc):** outcomes show method choice and integration, demonstrated through complete project or technical artefacts with stated assumptions and traceable decisions.
- **(MSc):** outcomes require evaluation, justification, and defensible design decisions, demonstrated through evidence-based deliverables and, where relevant, linkage to the MSc Capstone Project under P-AS-3 (referenced only).

Any minor imbalances identified during pilot review are handled as wording or tagging refinements, without changing the agreed module or topic structure.

11.3. Workload realism check

This section checks whether the planned workload per level is feasible for pilot delivery and assessment, given the module hours split (**C/A/S/T**), the required learning evidence, and the expected learner autonomy at **EQF 5**, **6**, and **7**. The intent is to confirm that workload is demanding enough to reach the outcomes, but not inflated beyond what can be delivered and assessed within the allocated time.

The check is applied at two levels: (1) across each level as a whole programme package, and (2) within each module (**M01 - M07**) to confirm internal consistency between hours, tasks, and assessment weights.

Workload assumptions by level

- **VET (EQF 5):** higher reliance on guided contact and assisted work for core tasks; self-study is focused on short preparation and completion of structured outputs.
- **BSc (EQF 6):** balanced independent work, with self-study used for method application, artefact completion, and report writing; assisted hours support troubleshooting and feedback.
- **MSc (EQF 7):** self-study supports advanced analysis, evaluation, and defended decisions; assisted hours are used for coaching, peer review, and milestone feedback, including preparation relevant to the Capstone Project under P-AS-3 where applicable.

Checks applied

- **Hours-to-evidence fit:** the assessment evidence required (deliverable type and scope) can realistically be produced within the total hours (T) and with the planned C/A/S split.
- **Weighting-to-effort consistency:** higher-weighted assessment components correspond to tasks with sufficient allocated time; low-weight items do not require disproportionate preparation.
- **Progression in autonomy:** self-study expectations increase from VET to MSc, without expecting MSc-style independence at VET level.
- **Peak-load avoidance:** deadlines and major submissions are distributed so that pilot delivery does not concentrate high-effort items into a single short period.
- **Assessment feasibility for staff:** the volume and format of learner evidence is scorable within pilot constraints (time to review, feedback, and moderation), especially where rubrics are required.
- **Capstone coherence (MSc):** modules that feed into the Capstone Project provide usable intermediate artefacts without duplicating capstone workload within the module assessments.

Outcome of the workload realism check

- The planned C/A/S/T allocations are sufficient to complete the required learning activities and generate assessable evidence at each level.
- Modules with heavier assessment evidence show corresponding time allocation, and lighter modules remain proportionate.
- The pilot workload is deliverable within the intended teaching model, with clear expectations for learner independence aligned to EQF level.

Any workload issues identified during pilot delivery are addressed through adjustment of task scope, evidence length, and scheduling within the existing hour allocations, without changing module or topic titles.

12. QUALITY ASSURANCE AND CHANGE CONTROL

This chapter defines how the curriculum will be quality-checked during pilot delivery and how changes will be managed in a controlled way. The goal is to protect curriculum consistency across the three levels (**VET EQF 5**, **BSc EQF 6**, **MSc EQF 7**), keep the seven-module structure (**M01 - M07**) stable, and ensure that any refinements are evidence-based and traceable.

Quality assurance focuses on whether learning outcomes are teachable and assessable as written, whether workload and assessment are realistic, and whether terminology and progression remain consistent across levels. Change control defines what can be adjusted during the pilot (for example: wording clarity, task scope, assessment evidence formatting, timing) and what cannot be changed without formal approval (for example: module set, topic titles, level structure, or agreed programme requirements such as the MSc Capstone under P-AS-3).

All proposed changes are recorded, reviewed, and approved according to the process described in this chapter, so that the post-pilot version reflects documented issues and agreed corrective actions rather than ad-hoc edits.

12.1. Internal QA checklist

This checklist is used by the project partners to validate the curriculum content before and during pilot delivery. It is applied at three levels: (1) programme level (per EQF level), (2) module level (M01 - M07), and (3) assessment level (evidence, weighting, pass rules). Each item is marked Pass, Minor issue, or Major issue, with a short note and an action owner.

A. Programme-level checks (per level: VET, BSc, MSc)

1. **Structure completeness:** all required chapters, tables, and figures are present and correctly numbered.
2. **Module set integrity:** exactly seven modules (M01 - M07) are included; no extra modules added or removed.
3. **Topic integrity:** each module includes the agreed topic titles for that level (T1 - T3), with no renaming.
4. **Terminology consistency:** key terms, acronyms, and P-AS component labels are used consistently across chapters.
5. **Progression clarity:** level differences are visible and appropriate (VET → BSc → MSc) without scope drift.
6. **Workload coherence:** hours (C/A/S/T) are consistent with the stated learning activities and assessment evidence.
7. **Capstone coherence (MSc):** capstone requirement under P-AS-3 is referenced where relevant, without duplicating the capstone template or changing its rules.

B. Module-level checks (apply to each module M01 - M07, per level)

1. **Module purpose clarity:** one clear purpose statement aligned to the module scope and level.
2. **MLO quality:** MLOs are measurable, unambiguous, and appropriately Bloom-tagged for the level.

3. **Topic coverage:** T1 - T3 collectively support all MLOs; no MLO is “orphaned” without teaching content.
4. **Internal alignment:** topic descriptions and learning activities match the MLO intent and level.
5. **Inputs/outputs realism:** expected learner outputs are feasible within the module hours and learner autonomy level.
6. **No unnecessary overlap:** content does not duplicate another module at the same level beyond stated prerequisites.
7. **P-AS linkage:** linked P-AS component(s) are stated and consistent with earlier chapters.

C. Assessment-level checks (per module, per level)

1. **Evidence-to-outcome match:** each assessed item can credibly evidence the MLOs at the stated Bloom level.
2. **Weighting coherence:** weights add to 100% and reflect the relative effort and importance of evidence.
3. **Pass rule clarity:** pass threshold and any minimum component rules are explicit and consistent.
4. **Scoring feasibility:** evidence is scorable within pilot constraints (time to assess, feedback load, moderation).
5. **Academic integrity controls:** evidence format reduces avoidable risks (clear instructions, versioning, traceability).
6. **Resit handling (if defined):** resubmission conditions are stated consistently across modules and levels.

D. Editorial and packaging checks (document readiness)

1. **Cross-references:** figure/table references point to the correct items; no broken numbering.
2. **Formatting consistency:** tables follow the same structure; headings match the Index exactly.
3. **Language control:** plain English, no marketing language, no informal phrasing.
4. **Copy-paste readiness:** all content is ready to paste into the deliverable without rework.

Output of the checklist: a short QA log per level listing issues, severity (minor/major), corrective action, owner, and the version/date applied.

12.2. Stakeholder validation record

This section defines how stakeholder feedback is collected, recorded, and resolved during pilot preparation and delivery. The validation record is used to confirm that the curriculum is understandable, teachable, assessable, and realistic for the target learners at each level (VET EQF 5, BSc EQF 6, MSc EQF 7), without changing the agreed module set (M01–M07) or the topic titles.

Validation sources

Stakeholder input is collected from:

- **Teaching staff and trainers** delivering the pilot (per level)
- **Learners** participating in the pilot (per level)
- **Industry or practice stakeholders** relevant to AgriTech roles (as available through partners)
- **Internal reviewers** from project partners (cross-partner consistency check)

What is validated

The validation record captures feedback on:

- **Clarity:** whether module purposes, MLOs, and topic descriptions are clear and unambiguous
- **Level fit:** whether expected performance matches EQF 5/6/7 expectations
- **Teachability:** whether content can be delivered within the planned C/A/S/T hours
- **Assessment feasibility:** whether evidence types, weights, and pass rules are workable and fair
- **Progression:** whether learners and teachers see a meaningful step-up across levels
- **Terminology:** whether terms and labels are consistent and understood

Validation record template

ID	Date	Level	Module	Stakeholder group	Feedback item	Issue type	Severity	Proposed change	Decision	Action owner	Target version /date	Status
SV-01		VET/ BSc/ MSc	M01–M07/ Programme	Trainer/ Learner/ Industry/ Partner		Clarity / Level fit / Workload / Assessment / Progression / Terminology	Minor/ Major		Accept / Reject / Defer			Open/ Closed

Decision rules

- **Minor issues** (wording clarity, small scope adjustments inside existing hours, assessment evidence formatting, timing within the module) can be accepted through partner QA review and recorded with the implemented change.
- **Major issues** (changes that affect module scope, topic titles, pass rules, or cross-level structure) require formal change control under Section 12.3 and must be explicitly approved before implementation.
- **Rejected items** remain logged with a short justification to avoid repeated discussions and to keep decisions traceable.

Minimum record for pilot completion

For each level, the validation record must include:

- At least one input round from trainers/teaching staff
- Learner feedback from pilot delivery
- A documented resolution status for every logged item (accepted, rejected, or deferred)
- A final summary note of the main adjustments implemented and the version/date applied

12.3. Change control rules across language versions

This section defines how curriculum changes are managed when the deliverable exists in more than one language version. The purpose is to ensure that all language versions remain equivalent in meaning, structure, and requirements, so that pilot delivery and assessment are consistent across partners.

Scope and principles

The English version is treated as the **reference source** for structure, numbering, and curriculum requirements, unless a different reference is formally agreed by the consortium.

- All language versions must preserve:
  - the **three-level structure** (VET EQF 5, BSc EQF 6, MSc EQF 7)
  - the **seven modules** (M01–M07) and **module codes**
  - the **topic titles** per level (T1–T3), unchanged
  - the **assessment evidence types, weights, and pass rules**

    - the **linked P-AS component(s)** per module
- Translations must prioritise **meaning equivalence** over literal phrasing. However, terminology must remain stable.

Change categories (language-sensitive)

Changes are classified to control how they propagate across languages:

Category A: Editorial only (translation-safe)

- Spelling, punctuation, formatting, layout fixes
- Minor wording improvements that do not change meaning
- Consistency fixes for repeated terms already defined

Rule: *may be applied in one language version, then mirrored in all other versions at the next sync.*

Category B: Meaning-preserving clarification

- Rephrasing to remove ambiguity while keeping the same requirement
- Shortening or tightening descriptions without removing required information
- Adjusting examples if examples exist (without changing expectations)

Rule: must be implemented in the reference version first, then updated in all languages.

Category C: Requirement change (controlled)

- Changes that alter expected learner performance, evidence, weighting, or pass rule
- Changes that affect module purpose, MLO meaning, or topic coverage
- Any change that would impact progression across levels

Rule: *requires formal approval and must be applied to all language versions before use in pilot delivery.*

Versioning and traceability rules

Every accepted change receives:

- a unique change ID (e.g., **CC-01**)
- level and module scope (**Programme / M01 - M07**)
- change category (**A/B/C**)
- reference location (**chapter/section/table/figure**)
- before/after text (**kept short and exact**)
- decision (**accept/reject/defer**), owner, and date

Language versions must carry the same **version number** and **change log IDs**. A language version cannot be released as "updated" if the corresponding changes are not reflected across the other versions.

Translation control rules for curriculum elements

To avoid accidental meaning drift:

- **Locked terms:** module codes, module titles, topic titles (**T1–T3**), **EQF levels**, **Bloom tags**, **P-AS component labels**, and **assessment weights** must not be altered.
- **Numeric values:** hours (**C/A/S/T**), weights, thresholds, and pass rules must be copied exactly, with consistent number formatting.
- **Outcome verbs:** the action verb in each **MLO must remain aligned to the assigned Bloom tag**. If a target language does not map cleanly, the closest equivalent verb is chosen and noted in the translation log.

- **Formatting parity:** tables must keep the same row/column structure so that cross-language comparison remains possible.

Release and synchronisation rules

- Updates are released in controlled cycles (pilot baseline, pilot mid-cycle update if needed, post-pilot final).
- No partner may pilot a changed requirement using only a local-language edit that is not reflected in the reference version.
- If urgent corrections are needed during pilot delivery, a short interim change note is issued (change ID, scope, applied date), and the change is synchronised across all languages before the next delivery session.

Minimum evidence of compliance

At pilot completion, partners provide:

- the consolidated change log with all change IDs and decisions
- a confirmation that all language versions are aligned to the same version number
- a list of any deferred changes scheduled for post-pilot consolidation

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Annexes

VET PROGRAMME COVER SHEET

TABLE CS-VET-1. PROGRAMME IDENTIFICATION

FIELD	ENTRY
Programme / subject title	MANAGEMENT OF SMART AGRITECH SYSTEMS
Programme pack	VET PROGRAM PACK (7 MODULES)
Level	VET (EQF 5)
Cohort / year	2025
Language	English
Credits / total hours	3MC / **90** H
Hours total (T)	**90**
Hours contact (C)	**36**
Hours assisted (A)	**24**
Hours self-study (S)	**30**
Version	v1.0
Date	31.10.2025
Owners (Programme Coordinator / Academic Lead)	***TBD*** / ***TBD***
Governance (RACI link)	[***TBD***]
External adviser(s)	[***TBD***]
QA status	[Draft / Reviewed / Approved]

TABLE CS-VET-2. MODULE LIST

NO.	MODULE CODE	MODULE TITLE	HOURS C	HOURS A	HOURS S	HOURS T	PRIMARY CAPABILITY THREAD(S)
1	M01 DTA	Deep Tech Agriculture	4	3	3	10	Demonstrates understanding of emerging digital technologies and agri-tech systems integration, recognizing their potential for sustainable and data-driven agriculture. Builds awareness of the interdisciplinary nature of AgriTech and its socio-environmental implications.
2	M02 PMI	Project Management & Innovation	5	3	4	12	Applies innovation and project management methods to plan and organize small-scale agri-tech initiatives. Develops capabilities in problem-solving, teamwork, and process improvement using structured planning tools.
3	M03 AIDTA	Artificial Intelligence for Deep Tech Agriculture	7	4	5	16	Utilizes AI-based analytics and decision-support tools to optimize farming operations. Strengthens competence in interpreting digital data and applying predictive insights within defined agricultural contexts.
4	M04 STSA	Sensor Technology in Smart Agriculture	6	4	5	15	Operates and maintains sensor and IoT systems to collect, monitor, and verify agri-data. Builds procedural competence in precision data acquisition and equipment interoperability.
5	M05 DCSA	Data Computing for Smart Agriculture	5	4	4	13	Applies data processing, visualization, and basic analytics for agricultural decision-making. Develops the ability to use computing tools to manage datasets, ensuring accuracy and usability for operational efficiency.
6	M06 BTA	Blockchain Technology for Agriculture	3	2	3	8	Implements blockchain principles for traceability, transparency, and trust in agricultural data systems. Strengthens understanding of data integrity, smart contracts, and compliance with ethical and regulatory frameworks.
7	M07 IADT	Integration for Agriculture Deep Tech	6	4	6	16	Synthesizes knowledge from all modules to design integrated AgriTech solutions. Demonstrates capability to connect technologies, manage data flow, and ensure system interoperability across digital farming platforms.
	TOTAL		36	24	30	90	

TABLE CS-VET-3. PROGRAMME LEARNING OUTCOMES (PLOS)

PLO ID	OUTCOME (VERB + OBJECT + CONTEXT + CONSTRAINTS + EVIDENCE)	BLOOM LEVEL (1–6)	KNOWLEDGE TYPE [F/C/P/M]
PLO-01	Identify and describe key digital and deep-tech tools used in smart and sustainable agriculture through guided learning activities and case examples demonstrating understanding of their basic functionality and benefits.	2 – Understand	F
PLO-02	Apply project management methods and innovation techniques to plan small-scale agri-tech initiatives, following given templates and supervision, and provide evidence through structured project documentation.	3 – Apply	P
PLO-03	Operate and interpret basic sensor and data systems in agriculture within simulated or supervised environments, verifying data accuracy and operational safety using provided datasets or real-time readings.	3 – Apply	P
PLO-04	Demonstrate teamwork and communication skills in collaborative agri-tech tasks, adhering to defined roles and ethical guidelines, evidenced by peer evaluations and facilitator feedback.	4 – Analyze	C
PLO-05	Integrate AI-based data interpretation and decision-support tools to optimize agricultural operations under structured tasks or predefined problems, submitting reflected digital reports or dashboards as evidence.	4 – Analyze	P
PLO-06	Evaluate and reflect on sustainability, data security, and ethical aspects of technology use in agriculture, considering enterprise, environmental, and social constraints, producing short analytical reflections or scenario analyses.	5 – Evaluate	M

TABLE CS-VET-4. TARGET BLOOM DISTRIBUTION (PROGRAMME LEVEL)

BLOOM LEVEL	REMEMBER	UNDERSTAND	APPLY	ANALYZE	EVALUATE	CREATE	TOTAL OUTCOMES	%
Planned	0	1	2	2	1	0	6	100%
After QA	0	1	2	2	1	0	6	100%

TABLE CS-VET-5. CROSS-MODULE ASSESSMENT STRATEGY

COMPONENT ID	TITLE	WEIGHT %	MODULES INVOLVED	TARGET BLOOM LEVELS	ITEM TYPES	INTEGRITY CONTROLS
P-AS-1	Applied Technical Tasks	35%	M1, M2, M3	R/U/A	Guided labs, quizzes, practical demonstrations	item banks, tutor observation, invigilation
P-AS-2	Analytical Case & Reflection	30%	M4, M5, M6	An/Ev	Case study memo, problem critique, short reflective brief	scoring rubric, viva sampling, peer verification
P-AS-3	Capstone (VET)	35%	M5–M7	A/An/Ev/Cr≤5%	Mini-project + live demo using scenario	authorship statement, performance demo, supervisor validation

Table CS-VET-6. QA and validation sign-off

ROLE	NAME	DATE	VERDICT	NOTES
Programme Coordinator		dd/mm/yyyy	Approve	Curriculum aligns with AGRITECH competency framework and workload plan; no major revisions required.
Academic Lead		dd/mm/yyyy	Approve / Rework	Verified constructive alignment and Bloom distribution consistency.
Partner QA reviewer		dd/mm/yyyy	Approve / Rework	Checked module snapshot card completeness and assessment pass rules.
External adviser (if used)		dd/mm/yyyy	Approve / Rework	Confirmed relevance to sector needs and feasibility for delivery.

Table CS-VET-7. Change control

VERSION	DATE	SECTIONS CHANGED	REASON	APPROVED BY
v1.0	31/01/2026	Initial release	New programme	

BSc PROGRAMME COVER SHEET

TABLE CS-BSC-1. PROGRAMME IDENTIFICATION

FIELD	ENTRY
Programme / subject title	MANAGEMENT OF SMART AGRITECH SYSTEMS
Programme pack	BSc PROGRAM PACK (7 MODULES)
Level	BSc (EQF 6)
Delivery language	English
Credits	4MC / 120 H
Total workload (T)	120 hours
Hours split (C/A/S)	C = 28, A = 28, S = 64
Version	v1.0
Date	31.10.2025
Programme Coordinator / Academic Lead	[TBD] / [TBD]
QA status	Draft / Reviewed / Approved

TABLE CS-BSC-2. MODULE LIST AND WORKLOAD (C/A/S/T HOURS)

NO.	MODULE CODE	SHORT CODE	MODULE TITLE	C	A	S	T
1	M01	01DTA	DEEP TECH AGRICULTURE	3	3	8	14
2	M02	02PMI	PROJECT MANAGEMENT AND INNOVATION	3	4	9	16
3	M03	03AI - DTA	FUNDAMENTALS OF AI	5	5	11	21
4	M04	04STSA	SENSOR TECHNOLOGY IN SMART AGRICULTURE	5	5	11	21
5	M05	05DCSA	DATA COMPUTING FOR SMART AGRICULTURE	4	4	10	18
6	M06	06BTA	BLOCKCHAIN TECHNOLOGY FOR AGRICULTURE	3	3	7	13
7	M07	07IADT	INTEGRATION FOR AGRICULTURE DEEP TECH	5	4	8	17
			TOTAL (programme)	28	28	64	120

TABLE CS-BSC-3. ENTRY REQUIREMENTS AND PREREQUISITES (BSC, EQF 6)

AREA	MINIMUM PREREQUISITE (REQUIRED)	RECOMMENDED (SUPPORTS PROGRESSION)
General education	Eligibility for Bachelor studies under the host institution rules, or recognition of prior learning (RPL) where applicable.	Prior coursework in agriculture, engineering, environmental systems, food systems, or IT - related fields.
Mathematics and statistics	Comfortable with algebra, percentages, units, and interpreting graphs.	Introductory statistics (distributions, correlation, basic inference) and confidence reading simple model outputs.
Digital literacy	Confident use of computer tools, file management, and office applications.	Spreadsheet competence (tables, filters, formulas) and basic data handling habits (naming, version control).
Data basics	Ability to work with simple datasets and interpret tables and charts.	Familiarity with data formats (CSV, JSON), basic data cleaning concepts, and simple visualisation tools.
Programming	Not required as an entry condition unless defined by the host institution.	Basic programming literacy (Python or similar) to support understanding of data workflows and AI tool use.
Sector familiarity	Basic understanding of agriculture or agri - food systems, gained through study or experience.	Exposure to real farm operations, agri - services, or technology - enabled agriculture practices.
Language	Ability to follow technical teaching in the delivery language and write short structured reports.	Ability to read short technical documentation and standards - style guidance.
Equipment access	Access to a learning device and stable internet for the duration of the programme.	Access to basic field - style data capture tools where relevant (mobile device, sensor kits provided by institution).

TABLE CS-BSC-4. PROGRAMME LEARNING OUTCOMES (PLOS) WITH BLOOM TAGS (BSC, EQF 6)

PLO CODE	BSC PROGRAMME LEARNING OUTCOME (EQF 6)	BLOOM TAG
PLO - BSc - 01	Analyse key sustainability and operational challenges in agriculture and relate them to feasible digital intervention points in a defined agri scenario.	An
PLO - BSc - 02	Explain major deep tech domains used in agriculture and evaluate their suitability and limitations for a given farm or agri - food need using explicit criteria.	E
PLO - BSc - 03	Develop a pilot project plan for an AgriTech solution including scope, stakeholders, workplan, resources, risks, and basic monitoring indicators.	A
PLO - BSc - 04	Build and document a data workflow to collect, clean, validate, and structure farm datasets and produce decision - ready summaries (tables, charts, maps, or dashboards).	An
PLO - BSc - 05	Select appropriate sensing approaches for a use case, define data quality checks, and interpret sensor data issues (accuracy, precision, drift, noise, placement effects).	An
PLO - BSc - 06	Configure or develop a baseline AI approach for an agri use case and evaluate model outputs and limitations using appropriate performance and context checks.	E
PLO - BSc - 07	Design and apply a traceability workflow for an agri - food process, defining events, actors, and permissions, and producing an auditable record structure.	A
PLO - BSc - 08	Apply responsible data handling and governance practices (data protection, access control, security basics, documentation of assumptions and risks) in project work.	A
PLO - BSc - 09	Produce an integrated solution brief that connects sensing, data computing, AI - supported decision steps, and traceability, including a simple architecture and validation plan.	

TABLE CS-BSC-5. ASSESSMENT COMPONENTS AND MINIMUM EVIDENCE STANDARD (BSC, EQF 6)

COMPONENT	ROLE AT BSC (EQF 6)	MINIMUM EVIDENCE STANDARD AT BSC
P - AS - 1 Technical Tasks	Proves learners can execute workflows and produce correct technical outputs.	Correct outputs plus short method notes (inputs, steps, checks).
P - AS - 2 Case and Reflection	Proves learners can analyse a scenario, apply criteria, and justify a decision with documented assumptions and constraints.	Clear scenario framing, stated criteria, justification linked to evidence, limitations stated.
P - AS - 3 Integration Mini - Project + Demo	Proves learners can integrate multiple elements into one coherent solution brief and workflow, with basic validation planning.	Coherent architecture/workflow, documented interfaces and data flow, validation plan, clear presentation of results.

TABLE CS-BSC-6. MINIMUM ASSESSMENT PACKAGE RULES (APPLIES TO ALL MODULES M01–M07)

REQUIREMENT	MINIMUM REQUIREMENT (ALL MODULES M01 - M07)	PURPOSE
Summative evidence	At least one graded submission mapped to MLOs using P - AS categories	Verifies achievement of module learning outcomes
Formative checkpoint	At least one feedback point before final submission	Improves quality and supports consistent standards
Rubric/checklist	Outcome - referenced marking guide used by assessors	Ensures consistent marking and auditability
Authentication	Confirmation of learner authorship (oral check, supervised checkpoint, version history, or equivalent)	Reduces academic integrity risk in applied work

Pass rule (programme default): module pass threshold is 50% (or 50/100) unless the host institution requires a higher threshold.

TABLE CS-BSC-7. QA AND VALIDATION SIGN-OFF

ROLE	NAME	DATE	VERDICT	NOTES
Programme Coordinator		dd/mm/yyyy	Approve	Curriculum aligns with AGRITECH competency framework and workload plan; no major revisions required.
Academic Lead		dd/mm/yyyy	Approve / Rework	Verified constructive alignment and Bloom distribution consistency.
Partner QA reviewer		dd/mm/yyyy	Approve / Rework	Checked module snapshot card completeness and assessment pass rules.
External adviser (if used)		dd/mm/yyyy	Approve / Rework	Confirmed relevance to sector needs and feasibility for delivery.

TABLE CS-BSC-8. CHANGE CONTROL

VERSION	DATE	SECTIONS CHANGED	REASON	APPROVED BY
v1.0	31/01/2026	Initial release	New programme	

MSc PROGRAMME COVER SHEET

Table CS-MSc-1. Programme identification

FIELD	ENTRY
Programme / subject title	MANAGEMENT OF SMART AGRITECH SYSTEMS
Programme pack	MSc PROGRAM PACK (7 MODULES)
Level	MSc (EQF 7)
Language	English
Credits	4MC / 120 H
Total workload (T)	120 hours
Hours split (C/A/S)	C = 28, A = 28, S = 64
End-of-programme requirement	Capstone Project assessed under P-AS-3
Version	v1.0
Date	31.10.2025
Programme Coordinator / Academic Lead	[TBD] / [TBD]
QA status	Draft / Reviewed / Approved

TABLE CS-MSC-2. MODULE LIST AND WORKLOAD (C/A/S/T HOURS)

NO.	MODULE CODE	SHORT CODE	MODULE TITLE	C	A	S	T
1	M01 DTA	01DTA	DEEP TECH AGRICULTURE	3	3	8	14
2	M02 PMI	02PMI	PROJECT MANAGEMENT AND INNOVATION	3	4	9	16
3	M03 AI-DTA	03AI - DTA	FUNDAMENTALS OF AI	5	5	11	21
4	M04 STSA	04STSA	SENSOR TECHNOLOGY IN SMART AGRICULTURE	5	5	11	21
5	M05 DCSA	05DCSA	DATA COMPUTING FOR SMART AGRICULTURE	4	4	10	18
6	M06 BTA	06BTA	BLOCKCHAIN TECHNOLOGY FOR AGRICULTURE	3	3	7	13
7	M07 IADT	07IADT	INTEGRATION FOR AGRICULTURE DEEP TECH	5	4	8	17
			TOTAL (programme)	28	28	64	120

TABLE CS-MSC-3. ENTRY REQUIREMENTS AND PREREQUISITES (MSC, EQF 7)

AREA	MINIMUM PREREQUISITE (REQUIRED)	RECOMMENDED (SUPPORTS PROGRESSION)
General education	Bachelor degree (or equivalent) in a relevant discipline, or recognition of prior learning (RPL) where applicable.	Prior study or work experience in agriculture, agri-food systems, sustainability, or digital innovation projects.
Mathematics and statistics	Ability to interpret statistical results and model performance measures; comfort with algebra and graphs.	Solid grounding in statistics (regression, classification metrics, validation concepts) and uncertainty interpretation.
Digital and data literacy	Confident use of digital tools and structured documentation.	Experience with data pipelines, version control habits, and reproducible workflow practices.
Programming	Ability to read and adapt basic scripts for data handling or analysis (language depends on provider).	Working proficiency in a programming language commonly used for data/AI (e.g., Python) and basic software engineering hygiene (testing, clear structure).
AI/ML foundations	Basic familiarity with AI/ML concepts and typical workflow steps (data, model, evaluation).	Prior hands-on exposure to training/evaluating models, feature engineering, or deploying AI outputs into a process.
Domain understanding	Basic understanding of agriculture/agri-food constraints (seasonality, variability, field conditions) or ability to acquire this quickly.	Familiarity with farm operations, sensing contexts, or agri-tech solutions and their adoption constraints.
Governance and compliance	Ability to follow data protection and ethics requirements under institutional rules.	Familiarity with data governance concepts (access control, documentation, risk reasoning, audit trails).
Language	Ability to read technical material and write structured reports in the delivery language.	Ability to produce concise professional documentation suitable for external review.
Equipment access	Access to a suitable device and stable internet; ability to use required software platforms.	Ability to run standard data/AI tools locally or via institutional environments (virtual labs/cloud platforms).

TABLE CS-MSC-4. PROGRAMME LEARNING OUTCOMES (PLOS) WITH BLOOM TAGS (MSC, EQF 7)

PLO CODE	MSC PROGRAMME LEARNING OUTCOME (EQF 7)	BLOOM TAG
PLO - MSc - 01	Evaluate sustainability, regulatory, and operational pressures in an agri-food context and design a technology-supported response plan with priorities, KPIs, and governance roles.	C
PLO - MSc - 02	Critically evaluate deep tech options across major domains for a selected use case and justify a technology portfolio decision using explicit feasibility, cost, risk, and sustainability criteria.	E
PLO - MSc - 03	Design and govern an AgriTech pilot or innovation initiative end-to-end, including stage-gate decisions, risk controls, resource planning, and an evaluation approach aligned to intended outcomes.	C
PLO - MSc - 04	Architect a data management and computing workflow for multi-source agricultural data (collection, quality control, integration, storage, access rules, and documentation) suitable for reproducible analysis and decision support.	C
PLO - MSc - 05	Design a sensing strategy and deployment plan for a complex agricultural scenario, including calibration, validation, and data quality assurance, and justify design choices under field constraints.	C
PLO - MSc - 06	Develop or configure an advanced AI approach for an agri use case and evaluate model performance, robustness, bias, and uncertainty, including clear limitations for deployment decisions.	E
PLO - MSc - 07	Design an auditable traceability and integrity workflow for an agri-food process, including event models, actor permissions, and smart-contract logic where appropriate, aligned to compliance needs.	C
PLO - MSc - 08	Evaluate data protection, cybersecurity, ethical, and governance risks in an AgriTech system and specify proportionate controls, documentation, and monitoring actions.	E
PLO - MSc - 09	Produce an integrated system architecture and deployment plan connecting sensing, data computing, AI-supported decisions, and traceability, including validation, monitoring, and improvement actions.	C

TABLE CS-MSC-5. ASSESSMENT COMPONENTS AND MINIMUM EVIDENCE STANDARD (MSC, EQF 7)

Component	Role at MSc (EQF 7)	Minimum evidence standard at MSc
P-AS-1 Technical Tasks	Proves learners can execute advanced workflows and produce reproducible technical outputs.	Correct outputs plus documented assumptions, quality checks, and method notes suitable for review.
P-AS-2 Case and Reflection	Proves learners can evaluate options using explicit criteria and defend choices under constraints (technical, operational, compliance).	Explicit criteria and trade-offs, risk reasoning, governance implications, and clear limitations stated.
P-AS-3 Integration Mini-Project + Demo	Proves learners can design and document an integrated solution approach with validation and monitoring logic.	Coherent architecture and interfaces, evidence of integration planning, validation approach, monitoring and improvement actions.

Note (programme-level): the end-of-programme Capstone Project requirement is assessed under P-AS-3 (see Section 9.4.7).

TABLE CS-MSC-6. MINIMUM ASSESSMENT PACKAGE RULES (APPLIES TO ALL MODULES M01–M07)

REQUIREMENT	MINIMUM REQUIREMENT (ALL MODULES M01–M07)	PURPOSE
Summative evidence	At least one graded submission mapped to MLOs using P-AS categories	Verifies achievement of module learning outcomes
Formative checkpoint	At least one feedback point before final submission	Improves quality and supports consistent standards
Rubric/checklist	Outcome-referenced marking guide used by assessors	Ensures consistent marking and auditability
Authentication	Confirmation of learner authorship (oral check, supervised checkpoint, version history, or equivalent)	Reduces academic integrity risk in applied work

Pass rule (programme default): module pass threshold is 50% unless the host institution requires a higher threshold.

TABLE CS-MSC-7. QA AND VALIDATION SIGN-OFF

ROLE	NAME	DATE	VERDICT	NOTES
Programme Coordinator		dd/mm/yyyy	Approve	Curriculum aligns with AGRITECH competency framework and workload plan; no major revisions required.
Academic Lead		dd/mm/yyyy	Approve / Rework	Verified constructive alignment and Bloom distribution consistency.
Partner QA reviewer		dd/mm/yyyy	Approve / Rework	Checked module snapshot card completeness and assessment pass rules.
External adviser (if used)		dd/mm/yyyy	Approve / Rework	Confirmed relevance to sector needs and feasibility for delivery.

TABLE CS-MSC-8. CHANGE CONTROL

VERSION	DATE	SECTIONS CHANGED	REASON	APPROVED BY
v1.0	31/01/2026	Initial release	New programme	