# Evidence-Based Curriculum Development and Programme Design in Higher Education

*From Educational Needs and Graduate Competencies to Coherent, Accreditation-Ready Programmes*

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## Abstract

Curriculum development is the point at which universities translate educational purposes, qualification requirements and organisational capabilities into learning that can be taught, assessed and credibly awarded. Yet programme proposals are often evaluated as inventories of modules rather than as integrated, evidence-supported educational designs. This chapter develops a Rwanda-anchored framework for constructing and scrutinising higher-education curricula across disciplinary, professional and digitally mediated contexts. Drawing on critical documentary synthesis, curriculum theory, constructive alignment, qualifications frameworks and official quality-assurance guidance, it examines programme justification, stakeholder evidence, graduate profiling, learning outcomes, credit and workload integrity, progression, assessment, interdisciplinary provision, practice-based education, internationalisation, recognition of prior learning and programme renewal. Its principal contribution is a curriculum-development architecture that distinguishes the educational worth of the intended programme, design coherence, implementation readiness and evidence of enacted achievement. The chapter presents a practical toolkit comprising a needs-analysis record, graduate-competency profile, sequencing map, constructive-alignment matrix, coherence diagnostic and model programme specification. An extended, explicitly hypothetical Rwandan undergraduate example connects a reconciled module register and semester allocations with curricular mapping, workload assessment, conditional validation and an evidence-based submission test. Regulatory obligations are distinguished from professional benchmarks and the author's proposed tools; no institutional implementation or independent validation is claimed. The resulting approach advances evidence-traceable quality governance while retaining disciplinary judgement, educational inclusion and capacity for curriculum renewal.

**Keywords:** curriculum development; programme design; constructive alignment; Rwanda Qualifications Framework; graduate competencies; curriculum mapping; accreditation readiness

## 4.1 Introduction: Curriculum as educational philosophy, institutional strategy, and regulatory responsibility

The most consequential curriculum errors are often concealed by documents that appear complete. A proposed degree may include a persuasive rationale, a graduate profile, forty professionally titled modules, a timetable and a list of qualified lecturers while failing to explain how students will develop the promised capabilities, why the modules appear in their particular order, or which assessments will establish achievement at the claimed qualification level. A programme can be internally consistent in its arithmetic but pedagogically incoherent; it can be intellectually excellent on paper but impossible to deliver with its available staffing; and it can obtain approval without maintaining the quality initially promised to students. These are different failures, demanding different forms of evidence and corrective action.

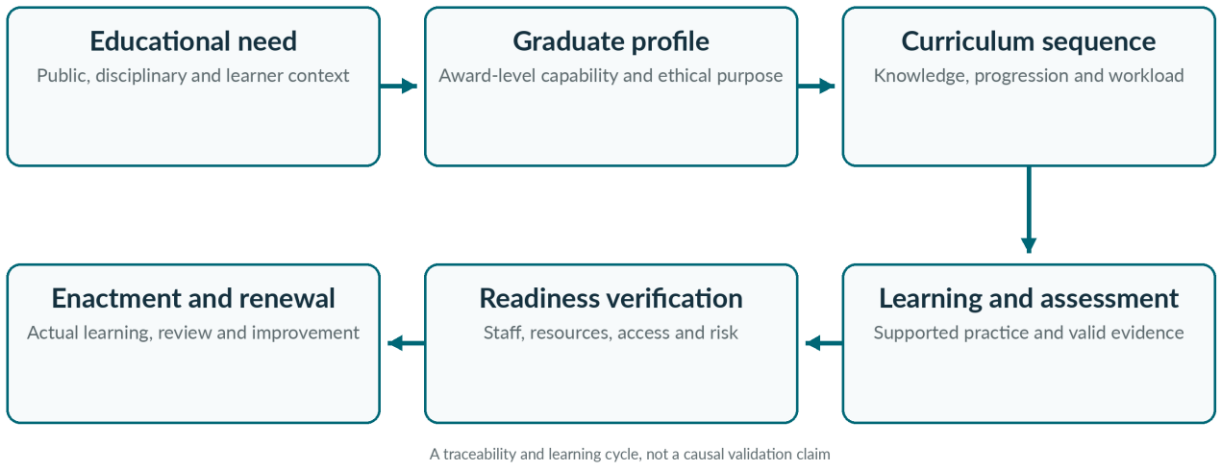
The previous chapters established that educational quality is multidimensional, legal and regulatory authority must be identified accurately, and institutional capability is the sustained capacity to deliver educational commitments. Curriculum development takes those conditions into the programme itself. Its object is not an inventory of teaching topics but an organised, publicly consequential proposition about what a qualification means. A curriculum determines which knowledge matters, whose experience is recognised, what students must learn to do, how intellectual independence develops, and which evidence can justify the award. As Lattuca and Stark (2009) argue, academic planning is embedded in wider institutional and societal contexts rather than produced by disciplinary experts in isolation. Curriculum is simultaneously an intellectual selection, a pedagogical design, a professional and ethical commitment, and a regulated institutional undertaking.

A defensible programme therefore requires four distinguishable judgements. **Educational justification** asks whether the intended qualification answers a worthwhile scholarly, public, professional or economic need. **Design coherence** asks whether graduate aims, qualification level, curriculum content, sequencing, learning activities and assessments form an academically plausible progression. **Implementation readiness** asks whether personnel, resources, partnerships, systems and learner protections have been committed and tested for the anticipated cohort. **Enacted effectiveness** asks, after delivery begins, what students actually experience and demonstrably achieve. The final judgement cannot be settled prospectively; equally, subsequent outcome evidence should not excuse a defective initial design or a breach of lawful requirements (Biggs, 1996; Harden, 2001; Sangwa, 2026).

Figure 4.1 summarises the interdependent curriculum decisions developed in this chapter. Its directional links indicate an idealised design-and-review process, with subsequent monitoring expected to feed back into reconsideration of need and graduate purposes; they do not assert a validated causal sequence.

**Figure 4.1**

*Evidence-traceable curriculum development from need to educational enhancement*




*Note.* Original conceptual diagram by the author. Relationships are proposed professional reasoning aids rather than established causal mechanisms or official HEC processes.

This chapter uses a critical, purposive synthesis of established curriculum scholarship, the doctoral work underpinning this volume, the completed introductory chapters and selected verifiable official sources. Rwanda is the anchor jurisdiction, particularly the 2021 Rwanda Qualifications Framework (RQF), the Higher Education Council's (HEC) programme instruments and the 2026 governing order. UNESCO, CAST, continental quality-assurance references and selected international practice offer analytical comparisons, not competing national law. Sources are considered for conceptual relevance and recognised authority, not through a claimed exhaustive systematic search. For each legal proposition, the relevant instrument must be read for scope, date, hierarchy and specific application; the public availability of an HEC template does not by itself establish its present legal force.

Scholarly sources provide theoretical explanations and critical comparison, not evidence that a specific Rwandan institution has implemented a practice. No interviews, employer survey, direct institutional audit or primary institutional records were generated for this chapter, and the purposive documentary synthesis is not represented as a PRISMA-compliant systematic review. All numerical programme illustrations are constructed examples rather than empirical observations or statements of HEC approval.

Curriculum coherence must also be distinguished from curricular uniformity. Programmes can differ legitimately in scholarly orientation, professional exposure and delivery configuration while meeting comparable qualification-level expectations. Such variation is defensible only where the institution explains its educational choices and the evidence demonstrates that important outcome claims remain credible. The central argument is that curriculum quality depends on **traceable educational coherence**: each major qualification claim must connect to a defensible educational need, appropriate disciplinary and professional standards, sequenced learning opportunities, a valid assessment demand, available implementation resources and an identifiable evidence source. Traceability is not a demand that every experience be reduced to an indicator. It is a safeguard against programmes whose strongest claims cannot be examined. It also establishes a curriculum-specific bridge to the proposed Integrated Evidence-Traceable Quality Governance (IETQG) architecture and the later Evidence-Traceable Accreditation Judgement (ETAJ) model, neither of which is represented here as an authorised HEC instrument or independently validated causal theory (Sangwa, 2026).

## 4.2 Curriculum theories and approaches: Discipline-based, outcomes-based, competency-based, interdisciplinary, and transformative education

Curriculum design begins with a question that cannot be settled by software, a benchmarking spreadsheet or a regulator's form: what is educationally worth knowing, understanding and being able to do? Tyler's (1949) classical approach links purposes, learning experiences, organisation and evaluation, providing a durable planning discipline. Stenhouse (1975), however, understood curriculum as a proposal open to critical testing and development in educational practice. The difference is substantial. A narrowly prescriptive model assumes that desirable outcomes can be specified in advance and subsequently measured. A process-oriented approach emphasises the professional judgement, inquiry and intellectual possibilities emerging through engagement with subject matter. Contemporary higher education needs both the clarity of explicit purposes and the openness necessary for inquiry, contested knowledge and unexpected learning.

**Discipline-based curricula** organise study around the conceptual structures, methods and standards through which knowledge is produced. Their major strength is intellectual depth: mathematics cannot be treated as an arbitrary sequence of workplace tasks, nor can history be understood without evidence criticism, historical context and interpretive argument. Disciplinary progression protects students from receiving a superficial collection of fashionable applications without the explanatory concepts needed to understand them. Yet disciplinary structures can become inward-looking when they protect inherited course boundaries despite new knowledge, public needs or opportunities for synthesis. Curriculum review must test whether disciplinary foundations are sufficient and how they contribute to the programme's larger intellectual purposes (Lattuca & Stark, 2009; Wheelahan, 2015).

**Outcomes-based education** begins with explicit graduate achievements and uses them to inform content, pedagogy and assessment. Harden (1999) emphasised the clarity this can bring to professional programmes. Properly employed, outcomes enable students and reviewers to ask what learning is expected and where it will be demonstrated. Its danger is not the presence of outcomes but their misuse: sprawling lists of low-level verbs, mechanical mapping that conceals curricular gaps, and the assumption that all valuable formation can be captured as discrete performances. A programme promising intellectual independence may undermine it if every teaching decision is tied to a narrow predetermined checklist. Outcomes should communicate defensible standards without exhausting the legitimate possibilities of scholarly education.

**Competency-based education** strengthens attention to integrated performance in contexts where knowledge, technical skill, professional judgement and ethical responsibility must operate together. In clinical practice, teaching, software engineering and public administration, being able to repeat an explanation is not equivalent to acting responsibly when consequences matter. Competence therefore demands assessment tasks that sufficiently resemble the intended domain while preserving validity, fairness and supervision. However, competency language can be impoverished when detached from underlying disciplinary knowledge. Wheelahan (2015) cautions that an exclusively skills-oriented curriculum may deny learners access to the conceptual resources that support future mobility, critical understanding and autonomy. The solution is a competency profile in which performance rests upon knowledge, inquiry and justified judgement rather than on tasks alone.

**Interdisciplinary curricula** respond to problems that resist treatment within one field, such as public health, climate adaptation, sustainable agriculture, data governance and digital commerce. Interdisciplinarity should be distinguished from placing unrelated modules under an attractive programme title. Real integration requires a clear organising problem, sufficient disciplinary foundations, methods for negotiating differing forms of evidence and assessment capable of examining synthesis. Students first need to understand what each discipline contributes and where its explanatory limits lie. Otherwise the programme risks breadth without depth, leaving graduates with scattered vocabulary rather than competence in interdisciplinary reasoning (Lattuca & Stark, 2009).

**Transformative and critical approaches** ask whose knowledge is privileged, whose participation is made possible, and how education develops agency rather than simply reproducing existing occupational arrangements. They direct curriculum designers to examine colonial inheritances, gendered exclusions, social inequalities, language, professional authority and the ethics of development. These perspectives are important for African universities, yet contextual relevance must not become permission to abandon rigorous disciplinary standards or to treat all claims as equally reliable. A decolonially alert science programme should take African research questions, institutional histories and contributions seriously while retaining the standards of evidence appropriate to scientific investigation. Educational transformation must remain distinguishable from the adoption of any particular political vocabulary.

The approaches become complementary when a programme uses disciplinary knowledge to establish intellectual seriousness, outcome and competency statements to clarify expected attainment, interdisciplinary learning to address complex questions, and critical reflection to examine values and social consequences. Their conflicts are productive when examined explicitly. If employer-defined competencies would crowd out essential theory, the team must defend a curricular balance. If a traditional discipline omits relevant emerging practice, it must explain its educational choices. If a cross-cutting ethical theme appears in a programme mission but nowhere in assessment, the programme must remedy the inconsistency. Curriculum theory becomes professionally useful precisely where it exposes such choices rather than offering a universal sequence of forms to complete.

**Table 4.1**

*Curriculum traditions and their evaluative implications*

| Approach | Principal design contribution | Typical failure mode | Appropriate review question |
|---|---|---|---|
| Discipline-based | Conceptual depth, methods and epistemic standards | Fragmented subjects or rigid inheritance | Which indispensable concepts and methods progress across the award? |
| Outcomes-based | Explicit intended achievement and accountability | Verb inflation and superficial mapping | Which authentic tasks demonstrate each outcome at award level? |

| Approach | Principal design contribution | Typical failure mode | Appropriate review question |
|---|---|---|---|
| Competency-based | Integrated judgement and performance | Atomised tasks without explanatory knowledge | Is professional performance grounded in transferable understanding? |
| Interdisciplinary | Integration across relevant knowledge domains | Attractive labels without methodological synthesis | Where is cross-disciplinary reasoning taught and assessed? |
| Transformative/critical | Agency, equity, contextual questioning and ethical reflection | Vague aspiration or ideological closure | Can students examine assumptions and defend claims with evidence? |

*Note.* Author's critical synthesis of Tyler (1949), Stenhouse (1975), Harden (1999), Lattuca and Stark (2009) and Wheelahan (2015). The approaches are overlapping, not mutually exclusive.

## 4.3 Identifying programme need: Educational, social, professional, research, economic, and labour-market analysis

The case for a programme must establish more than a marketable title. Needs analysis identifies a credible educational problem, tests whether a full qualification is an appropriate response and examines whether a proposed institution should supply it. It requires a distinction among **social need**, **disciplinary and research need**, **professional or statutory need**, **labour-market demand**, **student demand** and **institutional strategic opportunity**. These categories often overlap but cannot be substituted without explanation. A shortage of qualified practitioners may support a professional award; a recognised research gap might justify an advanced interdisciplinary degree even where current vacancies are limited; strong applicant interest might demonstrate market potential but little about the academic worth of a qualification.

A useful inquiry proceeds from the context and target population to capability gaps and plausible educational responses. For a proposed undergraduate programme in digital enterprise, a national strategy may indicate the importance of enterprise transformation, but it cannot establish that graduates need a particular module named "Blockchain Entrepreneurship" or that four identical analytics modules are necessary. Labour-market signals should be disaggregated by occupation, sector, region, technology and expected skill level. Advertised vacancies are especially incomplete in economies containing substantial informal work or self-employment, while employer surveys may overrepresent larger formal organisations. Reliable review combines official economic and education policies, occupational or professional reports, scholarly developments, comparable programmes, graduate evidence where lawfully available and reasoned consultation. Evidence should be dated and assessed for representativeness rather than collected merely to support a prior decision (Thomas et al., 2016).

The evaluative difficulty is one of **inference**. A strategic policy endorsing digital skills may justify consideration of digital capacity, but its evidentiary warrant for a particular 480-credit award is weak unless the institution specifies the work, knowledge and graduate capabilities that require higher education of that duration. Similarly, a business association's support letter demonstrates interest, not necessarily workplace capacity to employ or supervise graduates. Where reliable labour statistics do not exist, an institution should identify uncertainty rather than invent numerical forecasts. Reasonable qualitative evidence may establish educational relevance without pretending to predict the job market precisely.

A well-designed needs analysis should be capable of disconfirming the proposed award. The programme team should specify, before final design, what counter-evidence would require reframing or abandoning its preferred option: for example, a substantial existing supply of broadly equivalent programmes, no convincing graduate

distinction, an unstable occupational forecast, or mandatory practical capacity that the institution cannot obtain. Triangulation is meaningful only when conflicting evidence is recorded and interpreted, rather than when documents endorsing the proposal are merely accumulated. The final justification should identify its strongest evidence, unresolved questions, plausible alternative explanations and the academic decision taken in response.

A comprehensive assessment also tests **alternatives to a new award**. Could a current degree be renewed, a minor introduced, continuing professional education provided, a jointly delivered qualification developed, or recognition of prior learning improved? Programme proliferation consumes scarce lecturers, laboratories, student-support capacity and budget. Before approving a new programme title, institutions should examine overlap with their portfolio, the public implications of fragmentation and whether the same graduate need could be met more efficiently without lowering standards. If a new programme remains justified, its distinctiveness should be reflected in the graduate profile and curriculum, not merely promotional language.

**Needs-analysis evidence requires structured scepticism.** Every source has a date, origin, scope, interests and limits. National data may be credible but lag technological change. Employer testimony may be current but local or partial. Alumni accounts illuminate actual transitions but are affected by selection and recall. Benchmark curricula show what others choose to teach, not whether those choices have worked. In this sense needs analysis is not a one-off fact-finding exercise; it is an argument linking different kinds of evidence to a proportionate programme response. That argument should be open to challenge by academic peers, employers, learners, regulators and communities, without surrendering academic responsibility to any constituency.

**Table 4.2**

*Programme-needs evidence register*

| Evidence stream | Question addressed | Minimum record in an institutional needs analysis | Interpretive precaution |
|---|---|---|---|
| National and regional policy | Is there a public-development rationale? | Instrument, date, priority, relevant passage, applicability | A policy objective does not prescribe a module list. |
| Professional and occupational sources | What standards or practices shape competence? | Issuing body, current requirements, practice conditions | Differentiate mandatory professional rules from advice. |
| Scholarly and technical literature | What knowledge is established or emerging? | Recent review, unresolved debates, disciplinary expectations | Novelty does not automatically justify a whole degree. |
| Labour and graduate evidence | What transitions and opportunities are plausible? | Definitions, timeframe, sample, bias, source | Vacancies and employment rates do not establish learning. |
| Students and communities | Who may benefit or encounter barriers? | Documented feedback, access conditions, response | Demand must be interpreted with equity and affordability. |
| Institutional portfolio and resources | Can the university deliver sustainably? | Existing awards, overlap analysis, staffing and cost scenario | Institutional interest is not an independent public need. |

*Note.* Original professional instrument proposed by the author, drawing on the needs-assessment logic of Thomas et al. (2016).

## 4.4 Stakeholder consultation, benchmarking, and graduate competency profiling

Stakeholders contribute differently to curriculum judgement. Academics are responsible for the integrity of disciplinary knowledge; students and alumni can disclose learning burdens and transition problems; employers clarify professional performance and emerging practices; regulated professions specify mandatory competence; communities identify neglected needs; and authorities establish applicable qualifications and approval requirements. The challenge is to convert these diverse perspectives into informed programme decisions without treating a consultation vote as a substitute for academic reasoning. Consultation should ask respondents to identify tasks, knowledge demands, changing risks and capability failures, not simply whether they endorse a proposed programme.

Meaningful consultation requires transparency concerning whom the institution consulted, why, under what conditions and with what limitations. Formal committees may underrepresent rural enterprises, microbusinesses, public-interest careers, students with disabilities and informal-sector experience. An institution should avoid claiming that an entire profession or country "requires" a competence on the basis of a small purposive discussion. For a proposed programme, an advisory group may be useful, but its recommendations should be documented alongside the curriculum team's acceptance, adaptation or rejection and reasons. Academic staff need the freedom to disagree with an employer's desire for narrow software training when deeper transferable learning is warranted.

Benchmarking similarly requires careful choice of comparators. Comparing module titles with a high-ranking international institution may generate a surface resemblance while concealing different student preparation, award level, professional requirements and institutional resources. Strong benchmarking uses a transparent comparator rationale, verified programme documents and a multidimensional framework: qualification architecture, essential disciplinary domains, level of intellectual demand, sequence, practice, assessment, research, accessibility and evidence of implementation where available. A benchmark is a source of questions, not an automatic template. International comparison should strengthen local academic decision-making rather than displace it (Lattuca & Stark, 2009).

The **graduate competency profile** is the point where needs, scholarly standards, professional expectations and mission become a coherent educational identity. Rather than listing dozens of fashionable skills, it describes the integrated capabilities that a credible graduate should demonstrate independently. Each capability should include its disciplinary knowledge base, expected judgement, contexts of application, ethical responsibilities and plausible assessment evidence. A digital-enterprise graduate, for example, should not merely "understand analytics" but be able to formulate a decision question, interrogate data quality, choose suitable methods, explain uncertainty, assess fairness and recommend action under realistic constraints. Such a statement connects intellectual knowledge with an accountable decision rather than equating competence with a software certificate.

Profiles must also distinguish **entry capability**, **developing capability** and **exit capability**. Students should not be assumed to perform at graduate standard during introductory modules. The curriculum must create deliberate opportunities to practise with feedback before final demonstration. A single capstone cannot repair years of missing foundation; neither can repeated exposure to a topic establish increasing independence. A rigorous graduate profile therefore anticipates the programme's developmental structure and identifies outcomes requiring direct, moderated evidence at the point of award.

## 4.5 Formulating programme aims, graduate attributes, and measurable programme learning outcomes

Programme aims express the educational purposes and distinctive contribution of an award. Graduate attributes communicate a broader institutional conception of an educated person, such as scholarly integrity, communication, civic responsibility or capacity for continued learning. **Programme learning outcomes (PLOs)** state the

demonstrable achievements expected of students who qualify for the award. These three levels should cohere but should not be copied into one another. Aims can properly express aspirations too broad for direct assessment; PLOs must be sufficiently clear to justify judgements about attainment; attributes may be developed across several programmes while receiving different disciplinary expression (Biggs & Tang, 2011).

A well-specified PLO combines an intelligible performance, relevant knowledge or context and the standard of independent judgement appropriate to the award. Observable verbs assist clarity but cannot by themselves guarantee intellectual rigour. "Critically evaluate" can describe a demanding research task or a superficial five-minute response; difficulty depends on evidence complexity, methodological expectations, conditions and standards. The formulation "critically evaluate contemporary management issues" offers little guidance about disciplinary scope or the basis of judgement. A stronger undergraduate outcome would require graduates to "evaluate alternative enterprise strategies using relevant market and financial evidence, explicitly appraising uncertainty, ethical implications and implementation constraints." Its assessment implications are more readily testable, although detailed criteria must still be specified in the programme's assessment blueprint.

A programme should have a manageable number of integrated PLOs, collectively covering disciplinary knowledge, inquiry, application, communication, professional or civic responsibility and appropriate independent learning. No universal number is legally prescribed by that proposition. The number should be chosen because each outcome can be taught, progressively developed and assessed, and because the set captures the award's intellectual identity without making mapping unusable. Designers should avoid outcomes such as "appreciate the importance of entrepreneurship" when they need assessable evidence, and should avoid promising "mastery of all AI technologies" where the field changes rapidly and no defensible level is specified.

Outcome quality can be evaluated through five tests. **Worth** asks whether the capability is academically and socially defensible. **Level** asks whether the demand corresponds to the qualification's descriptors. **Clarity** asks whether responsible assessors can recognise acceptable evidence. **Coverage** asks whether the set represents the graduate profile without major gaps. **Feasibility** asks whether a realistic programme can teach and assess the set with available resources. These tests must be applied together. A perfectly measurable but trivial outcome is not high-quality curriculum design; an inspiring outcome with no credible opportunity for development is equally problematic.

The critical relation is not simply between two texts, programme outcomes and module outcomes, but between claims and students' work. A programme claiming advanced inquiry must allocate sufficient opportunities for framing questions, using evidence, engaging competing explanations and receiving feedback before a final research assessment. A programme claiming ethical professionalism must test decisions under plausible conflicts of interest rather than merely require attendance at an ethics lecture. As Harden (2001) showed for curriculum mapping, the value of explicit outcomes lies in making relationships visible. The mapping should expose missing development, redundant repetition and assessment blind spots, not merely demonstrate that every cell has been marked.

**Table 4.3**

*Illustrative graduate outcome architecture*

| Graduate domain | Illustrative PLO for an undergraduate applied programme | Evidence of attainment | Core academic safeguard |
|---|---|---|---|
| Disciplinary reasoning | Explain and apply foundational economic, organisational and quantitative concepts to unfamiliar enterprise problems. | Moderated analytical examination and integrated case analysis | Theory must exceed tool-specific training. |

| Graduate domain | Illustrative PLO for an undergraduate applied programme | Evidence of attainment | Core academic safeguard |
|---|---|---|---|
| Inquiry and evidence | Design a proportionate inquiry, assess data quality and communicate warranted findings and uncertainty. | Research-methods portfolio and supervised capstone | Evidence must support inferences; integrity must be verifiable. |
| Professional practice | Develop and defend a viable enterprise or service intervention under constraints. | Practicum evidence, prototype and oral defence | Feasibility and judgement matter more than presentation quality. |
| Ethics and digital responsibility | Appraise privacy, fairness, security and ethical risks of business technology choices. | Scenario-based decision memo with reasoned justification | Human accountability cannot be delegated to AI. |
| Communication and lifelong learning | Communicate with diverse audiences, respond to critique and plan independent development. | Revised professional report, presentation and reflective portfolio | Assess substantive reasoning, not fluency alone. |

*Note.* Original example created for this chapter; not an official or accredited programme specification.

## 4.6 Aligning qualifications with national frameworks, award levels, credits, and notional learning hours

Qualification alignment asks whether the award's title, level, scope, duration, credit volume, expected intellectual complexity and conditions of attainment form one defensible academic claim. It is not achieved by appending the name of a national qualifications framework to a document. The curriculum must demonstrate that students move towards the types of knowledge, application, cognitive skill, communication and autonomy associated with its claimed level. Examinations, research tasks and practical assessments must be sufficiently demanding to distinguish the award from neighbouring qualifications. A framework is consequently both an interpretive resource and a guard against credential inflation.

In Rwanda, Ministerial Order No. 003/MINEDUC/2021 of 20 October 2021 establishes the RQF. Its general higher-education sub-framework identifies diploma qualifications at Level 6, advanced diplomas at Level 7, bachelor's qualifications at Level 8, and postgraduate qualifications at Levels 9 and 10. Its general table indicates 480 cumulative credits for a bachelor's degree, 180 for the listed master's qualification and 360 for the doctorate, subject to the distinctions and qualifications in the instrument. Section 5.2 defines one credit as ten notional learning hours and uses 120 credits, corresponding to 1,200 hours, as the annual reference (Republic of Rwanda, 2021). The 2021 instrument should not be silently combined with the older, differently numbered higher-education award tables still retrievable through legacy HEC webpages. In a live proposal, the reviewer should identify the operative RQF, more specific current sector instruments, relevant approval conditions and any legally authorised exceptions.

Notional learning time includes guided teaching, independent study, reading, individual or collaborative practice, practical activities, assessment preparation and assessment itself. It is not equivalent to timetabled lectures. In a 15-credit module, 150 notional hours might plausibly include 36 hours of facilitated interaction, 54 hours of readings and guided exercises, 36 hours of independent investigation and 24 hours of assessment work. This allocation is hypothetical and must be reconciled with the particular cohort, subject and calendar. The test is not whether a table adds to 150 but whether the intended learning can reasonably occur in those hours. If students simultaneously undertake four such modules, their total learning expectation is 600 hours for the teaching period, which must be tested against its actual duration, student circumstances and assessment calendar.

Credit counting alone also fails to reveal qualification level. A 30-credit capstone requiring compilation of descriptive web sources may be intellectually weaker than a 15-credit module involving demanding independent inquiry, theoretical criticism and a properly defended analytical result. Programme teams should therefore distinguish **volume**, **complexity**, **autonomy** and **attainment**. Volume is the workload associated with the educational opportunity; complexity concerns the structure and difficulty of the knowledge and problems; autonomy concerns the independence of judgement expected; and attainment requires students actually to meet the relevant standards. Credits represent notional workload towards outcomes, not a licence to award academic achievement for mere attendance (Biggs & Tang, 2011; Republic of Rwanda, 2021).

Duration and workload must be tested together. A hypothetical 480-credit programme over four years produces an arithmetic distribution of 120 credits and 1,200 hours per year. Compressing exactly the same workload into three years produces 160 credits and 1,600 notional hours annually. The figures do not themselves decide whether an accelerated pathway is lawful, but they establish a substantial issue requiring specific authoritative approval and a convincing feasibility analysis. An evaluator should check the academic calendar, simultaneous module burden, vacation or block-teaching assumptions, assessment time and placement capacity. Part-time or flexible study requires its own intelligible accumulation and maximum-period rules, rather than the fiction that the same weekly workload can be absorbed without consequence by every learner.

Admission criteria, progression and award rules complete the qualification architecture. Prerequisites should protect necessary foundation, not reproduce avoidable barriers. Assessment thresholds, reassessment arrangements, transfer decisions, compensation rules where allowed and exit routes should be consistent with the approved academic regulations. A proposal must explain whether a learner can advance while missing a competence essential to a later laboratory, clinical or analytical module. Where professional registration or practice rights are involved, the academic award and the external professional authorisation must be verified separately. Qualified internal approval cannot substitute for the legally required external act (Higher Education Council, n.d.-a; Republic of Rwanda, 2026).

A robust credit register is a master-controlled document, not three independently maintained spreadsheets. It records module code and title, credit value, academic year and term, qualification-level contribution, prerequisites, mode, contact and independent workload, assessment, owner and effective version. Automated arithmetic can detect duplicate codes or inconsistent totals, but human review must establish whether progression is educationally defensible. In the worked example below, an entire four-year plan is therefore reconciled numerically and evaluated intellectually rather than treated as a list of compliant numbers.

## 4.7 Designing module structures: Content coverage, progression, prerequisites, sequencing, and workload balance

Curriculum structure determines the relationship among knowledge domains over time. The simplest architecture is a sequence from foundations through development and integration to independently defended performance. Yet sequence is not always linear: students may revisit core concepts in increasingly complex applications, integrate methods alongside theory or study professional problems before having mastered every underlying discipline. Such progression can be represented as a spiral, provided that later encounters increase complexity, independence or transfer. Repetition without advancement is not spiral learning; novelty without prerequisites is not progression. A well-designed programme explains how its sequence balances accumulation, integration and application (Harden, 2001).

The central design unit is a **module with a defined educational function**. Every module should contribute to one or more PLOs, carry a coherent level and workload, have appropriately challenging outcomes and assessments, and occupy a defensible place in the programme. Its existence should be justified by knowledge necessity, developmental contribution or integrative purpose. Modules duplicated under attractive but overlapping titles

consume scarce credits. Conversely, essential foundations may be absent when curriculum teams privilege immediately marketable topics. An expert reviewer should therefore examine the complete module content, not merely title resemblance, and determine whether essential disciplinary domains are covered at appropriate depth.

Prerequisites and co-requisites function as educational safeguards. A course in statistical inference normally presupposes appropriate quantitative understanding; advanced programming requires foundations in algorithmic reasoning and computational practice; a clinical practicum requires specified safety and disciplinary competence. Formal prerequisites should correspond to actual dependencies rather than arbitrary administrative sequencing. A curriculum map ought to show where students acquire the competence and how that acquisition is checked. Where a programme permits multiple entry points, bridging provision or prior-learning assessment must establish equivalent readiness. Flexibility that conceals missing foundations transfers academic risk onto learners.

Workload should be evaluated both **horizontally** and **vertically**. Horizontal analysis examines what a student encounters in the same term: simultaneous deadlines, laboratory sessions, placement days, group demands and assessment concentration. Vertical analysis examines how learning deepens across successive terms and years. A programme may distribute credits evenly while setting four high-stakes submissions during the same week; another may defer every demanding research task to the last term. Constructive sequencing needs an assessment calendar and student-workload estimate, not merely an annual credit total. Consultation with learners can test assumptions, but consultation is not a substitute for academically calibrated notional-time analysis.

The curriculum also contains **boundaries and interfaces**. An internship may rely on the preceding ethics module and supply evidence for a later capstone; a statistics module may underpin marketing research, financial forecasting and a research project; a communications module may cultivate skills assessed repeatedly across disciplinary contexts. These interfaces require named academic owners and agreed assessment standards. Otherwise, each module can appear individually adequate while the programme suffers gaps, unjustified duplication and inconsistent terminology. An academic curriculum committee should be able to trace these relationships in a controlled sequencing and coverage register and require a reasoned explanation for every unaddressed critical dependency.

**Table 4.4**

*Module-sequencing diagnostic*

| Progression stage | Primary learner demand | Typical design features | Diagnostic warning |
|---|---|---|---|
| Foundation | Explain concepts, use elementary methods and recognise evidence limits | Disciplinary introductions, quantitative/literacy support, structured feedback | Advanced modules assume unverified entry knowledge. |
| Development | Apply and compare methods to bounded unfamiliar problems | Data exercises, case analysis, guided projects, integrative seminars | Exposure is repeatedly counted as competence. |
| Integration | Combine disciplinary reasoning in realistic contexts | Practice, simulations, collaborative inquiry, ethically complex tasks | Integration is promised but not assessed. |
| Independent demonstration | Justify decisions, conduct inquiry and defend original applied work | Capstone, supervised research, professional portfolio or practicum | Final assessment is too weak for qualification level. |

*Note.* Author's operational synthesis informed by Harden (2001) and Biggs and Tang (2011). Stages may overlap rather than correspond mechanically to years.

## 4.8 Constructive alignment between programme outcomes, module learning outcomes, learning activities, and assessment

Constructive alignment is often described as consistency among outcomes, teaching and assessment. That account is necessary but incomplete. Biggs (1996) placed learner activity at the centre: the purpose of curriculum design is to elicit the forms of understanding and performance being claimed, not simply to reproduce similar wording across documents. A programme may map "critical thinking" to every module while assessing only factual recall. Conversely, an innovative project may require high-level reasoning that was never taught or supported. Genuine alignment requires an intelligible progression from graduate expectations to learning opportunities and independent evidence of achievement.

The alignment chain begins with the graduate profile and qualification descriptors. PLOs translate the profile into award-level outcomes. Module learning outcomes (MLOs) then specify what a particular component contributes to those PLOs. Learning activities create opportunities for students to acquire and practise the capability; formative feedback allows revision; assessment tasks require demonstrable performance; marking criteria determine what counts as acceptable evidence. At programme level, moderation and review establish whether the collection of module assessments covers the graduate profile at the requisite level. One cannot infer programme coherence from the separate adequacy of each module.

A useful curriculum map distinguishes **introduced (I)**, **developed (D)** and **assessed at exit standard (A)**, while keeping other types of formative and summative evidence available. I indicates that the capability receives explicit foundational attention; D indicates substantive practice, feedback and increasing complexity; A indicates an assessment providing direct evidence against the award-level expectation. These labels are proposed mapping codes, not HEC-prescribed classifications. A PLO marked A only in a final capstone may be at risk if earlier developmental opportunities are absent. A PLO marked A in every term is equally questionable if the claim concerns final independent achievement rather than routine low-level exercises. The matrix is a diagnostic representation whose entries must be substantiated by module plans and assessment artefacts.

Alignment is strengthened by evaluating **assessment validity**, not just coverage. Does the task require the capability claimed? Can a student succeed without demonstrating it? Would reliance on a generative-AI system make the observed response ambiguous about individual achievement? Does the rubric privilege surface presentation over disciplinary reasoning? Are conditions and accommodations fair? Can different markers reach sufficiently consistent judgements? In higher education, complex outputs may require several kinds of evidence: a written analytical report, documented process, supervised demonstration and oral questioning can together support a stronger inference than a single polished submission. These forms should be proportionate to the stakes and include due process, rather than unnecessary surveillance (Biggs & Tang, 2011; UNESCO, 2023a).

Alignment must include feedback and opportunities to use feedback. Nicol and Macfarlane-Dick (2006) demonstrate that formative assessment can support self-regulation when learners have criteria they understand, information about gaps in performance and opportunities to act on that information. In a curriculum map, this means verifying that a learner who receives feedback on research design in Year 2 can revise the method in a later authentic assignment before the capstone. A programme with numerous examinations but no cumulative revision opportunities may measure isolated performances without cultivating the capacity for independent self-correction. Furthermore, assessment should foster graduates' ability to evaluate future work beyond university, rather than only certify performance at the end of each semester (Boud & Falchikov, 2006).

An alignment matrix must therefore contain more than ticks. The stronger record links each PLO to contributing MLOs, teaching activities, assessment tasks, assessed criteria, academic year, direct evidence and responsible owner. It should flag outcomes with no assessment, assessed outcomes with little teaching, unnecessary overassessment, excessive common assessment methods and weak calibration across assessors. Internal reviewers may sample actual assignment briefs and grading descriptors to verify the entries. This document-to-practice test is

central to evidence-traceable accreditation judgement: a curriculum map is a claim about design, while the assessment it references can provide independent evidence about how the claim will be evaluated (Sangwa, 2026).

**Table 4.5**

*Programme-level constructive-alignment matrix for the hypothetical example developed in Section 4.14*

| PLO | Foundation and development | Direct exit-standard evidence | Verification question |
|---|---|---|---|
| P1: Disciplinary reasoning | Business, economics, quantitative methods; integrative cases | Year 4 strategic analysis and capstone | Do students justify decisions through relevant theory? |
| P2: Evidence and research | Inquiry, statistical inference, research ethics; coached projects | Methods portfolio and independently defended capstone | Is method choice justified and data provenance credible? |
| P3: Applied innovation | Programming, design, operations; enterprise studio and placement | Prototype/feasibility report plus presentation | Is performance observable beyond written assertion? |
| P4: Ethics and governance | Legal foundations, privacy, AI responsibility; applied scenarios | Risk assessment and professional ethics examination | Are trade-offs evaluated rather than definitions recited? |
| P5: Communication | Academic writing, negotiated group work, professional briefs | Revised report and oral defence | Are communication claims disciplinary and audience-sensitive? |
| P6: Sustainability and learning | Social impact, systems thinking, reflective practice | Integrated impact analysis and developmental portfolio | Does assessment test critical reflection and future learning? |

*Note.* The evidence is proposed, not collected or verified.

## 4.9 Integrating research, digital literacy, artificial intelligence, entrepreneurship, ethics, sustainability, and lifelong learning

Contemporary programme proposals routinely promise research competence, digital fluency, entrepreneurial thinking, ethical decision-making, environmental responsibility and employability. The difficulty is translating these broad commitments into discipline-sensitive learning instead of adding a token elective for each theme. Cross-cutting capacities should possess a clearly defined learning trajectory, relevant teaching staff and direct assessment evidence. Some warrant dedicated modules; others require repeated application across disciplinary settings. The design choice should respond to what students must actually learn, not to the number of fashionable terms a programme specification can display.

**Research and information literacy** should begin before the capstone. Students need to formulate answerable questions, distinguish data from inference, locate trustworthy literature, understand methods and limitations, cite transparently, and recognise the responsibilities associated with research participants and sensitive data. These skills require progressive tasks that differ in intellectual complexity. A first-year source appraisal may teach students to inspect authorship and evidence; a later methods module can address sampling, research ethics and methodological fit; an advanced inquiry requires justification of claims in relation to alternative explanations. A capstone cannot substitute for several years of methodological formation.

**Digital and AI literacy** should be defined in terms of informed judgement, not brand-specific software proficiency. UNESCO's student AI competency framework identifies human-centred approaches, ethics, AI

techniques and applications, and AI-system design as related dimensions, while the teacher framework emphasises competence and oversight among educators (Miao et al., 2024; Miao & Cukurova, 2024). A university may use these as international pedagogical references, but they are not Rwandan legal requirements merely because UNESCO published them. Programme designers should decide what each discipline needs to know about AI capabilities, error, bias, data governance, intellectual property, professional liability and appropriate human verification. In Rwanda, this pedagogical choice should also be checked against HEC's published 2025 virtual-learning and AI assessment guidance, with its current applicability established for the intended mode of provision (Higher Education Council, 2025). An engineering or data-science student may require system design; a teacher or business graduate may need critical evaluation and responsible use; every graduate should understand why automated fluency is not synonymous with reliable knowledge.

**Entrepreneurship** should be broader than compulsory business-plan rhetoric. In professional and scholarly programmes, it can mean opportunity recognition, responsible resource stewardship, innovation, financial reasoning and implementation under uncertainty. **Ethics** should be encountered where real trade-offs occur, such as privacy versus analytic convenience, safety versus cost, research ambition versus consent, or growth versus environmental damage. **Sustainability** should concern evidence-based assessment of social, economic and ecological consequences rather than generic declarations of commitment. The OECD Learning Compass highlights agency and responsibility as orientation points, while UNESCO's 2023 education recommendation situates global citizenship and sustainable development among learning considerations (OECD, n.d.; UNESCO, 2023b). These international perspectives should inform institutional deliberation without overriding a programme's disciplinary or national qualification requirements.

**Lifelong learning** is particularly difficult to assess directly because graduates' future behaviour depends on circumstances not yet observable. A degree can nonetheless create and examine antecedent capabilities: self-assessment, identification of knowledge limits, response to feedback, source evaluation, independent problem formulation and reasoned plans for further development. It should avoid claiming that the availability of an alumni portal or a final reflective essay proves lifelong learning. Programme review needs appropriately cautious inferences about what curricula prepare students to do after graduation.

## 4.10 Work-integrated learning, internships, clinical and professional placements, capstones, and applied research

Learning in professional and community settings can connect theoretical understanding with situated judgement, expose students to constraints absent from the classroom and improve their capacity for reflective practice. Yet practical education is often praised without attention to its design conditions. An internship is not inherently educational merely because a student occupies a workplace; a clinical placement is not adequate simply because a facility has beds; a capstone is not rigorous simply because it is the last assignment. Each experience requires intended outcomes, suitable supervision, safe and ethical participation, assessed evidence and continuity arrangements.

The structure of work-integrated learning must reflect the profession and the lawful boundary between student learning and regulated practice. A business student might investigate a documented operational problem with a mentor and submit a critically justified improvement proposal. A trainee teacher may need observed teaching and reflective feedback. Clinical and laboratory students can require specified equipment, practice opportunities, professional supervision and safety controls that cannot be replaced by remote observation. Where external bodies govern scope of practice, mandatory standards and licensing requirements must be established by current authoritative sources before the programme promises professional eligibility. The HEC materials include national guidance on industrial attachment, while specific professional programmes may have additional requirements (Higher Education Council, 2021).

A credible placement agreement defines the provider's and institution's responsibilities, suitability of site and mentor, learning activities, supervision frequency, working conditions, insurance or other protections where applicable, accessibility, confidentiality, ethical handling of data, assessment authority, reporting of incidents and continuity if the placement fails. Quality is not guaranteed by the existence of an affiliation memorandum. Institutions should verify the number of genuinely available placements relative to the proposed cohort and consider geographic and financial barriers. A placement opportunity that requires students to relocate at their own expense can be exclusionary even when it offers valuable experience.

**Capstones and applied research** provide particularly valuable integrative assessment when they require students to demonstrate disciplinary mastery and independent synthesis. A high-quality capstone begins with a tractable question or design problem, uses appropriate methods, applies ethically sourced evidence, makes uncertainty visible and requires a defensible conclusion. Supervision should support learning without taking authorship from the student. Where group projects are appropriate, assessment must still establish meaningful individual contribution. Oral defence, research logs, version histories and moderated artefacts can strengthen evidence of independent achievement, especially in an AI-mediated environment. These procedures should be fair, proportionate and explicitly communicated in advance.

The assessment of practical competence should not be reduced to a host supervisor's unstructured satisfaction score. Supervisors may observe aspects of attendance, conduct and workplace performance, but academic staff retain responsibility for determining whether outcomes meet the qualification standard. Calibration, explicit rubrics, evidence sampling and appeal arrangements should therefore operate across academic and workplace assessors. An institutional review should examine practice agreements, supervisor induction, student logs, actual capacity, incidents, feedback and assessed performance, while distinguishing plans from the later evidence of real implementation. In this way experiential learning becomes a disciplined part of curriculum architecture rather than an honorary credit block.

## 4.11 Curriculum internationalisation, African contextual relevance, interdisciplinary education, and indigenous knowledge

Internationalisation has legitimate intellectual purposes: graduates should understand bodies of knowledge produced elsewhere, engage with diverse scholarly perspectives, work across contexts and assess claims that travel between societies. It becomes superficial, however, when reduced to imported textbooks, an overseas institutional logo, foreign visiting lecturers or a promise of international employability. An internationally credible curriculum is one whose knowledge, assessments, qualifications and student protections can withstand serious scrutiny beyond its institution, while remaining responsive to the society in which it is taught. It need not mimic the timetable or elective structure of a prestigious university in a different regulatory and resource environment.

African contextual relevance requires specific pedagogical choices. A programme in entrepreneurship should analyse informal and formal enterprises, regional trade arrangements, digital payments, agricultural value chains and public-service constraints where these are relevant to its declared aims. A climate-related programme should engage African environmental data and the uncertainties of place-specific models. A history or education programme should evaluate African scholars and intellectual traditions as substantive contributors to knowledge rather than as supplementary cultural examples. Localisation is not achieved by inserting a Rwanda-focused case at the end of an otherwise imported syllabus. It concerns the questions students learn to ask, the evidence they are taught to consider, the problems through which they apply knowledge and the relationships between local and global scholarship.

The curricular treatment of **indigenous and community knowledge** demands both respect and epistemic discipline. Community agricultural practice, land management, local languages, medical knowledge, artistic traditions and conflict-resolution mechanisms can provide valuable evidence and conceptual challenges. Such

material should be studied with appropriate attention to consent, attribution, intellectual property, cultural stewardship and the distinction between observed practice and independently verified causal efficacy. A scientific curriculum should not dismiss a practice because its origin is indigenous, nor affirm an empirical claim because the practice is longstanding. The educational goal is the capacity to examine knowledge fairly with methods suited to the proposition and its consequences. This supports epistemic inclusion without abandoning scholarly standards.

International qualifications and mobility introduce additional boundaries. Alignment with regional comparability initiatives, including the African Standards and Guidelines for Quality Assurance in Higher Education, can improve shared understanding but does not automatically confer equivalence or authorise practice in another country (HAQAA Initiative, 2018). Students should receive accurate information about the awarding institution, local approval, partner roles, credit transfer and the limits of cross-border recognition. For jointly delivered programmes, curriculum teams should allocate responsibilities for assessment, supervision, quality assurance, complaints, data protection and teach-out with sufficient legal clarity. Curriculum internationalisation becomes ethically deficient when international prestige is used to obscure uncertain recognition or fragmented academic accountability.

Interdisciplinary teaching can support contextual relevance when genuine public problems organise collaborative inquiry. For instance, a health-systems module might integrate epidemiology, organisational behaviour, ethics and resource economics around a documented decision problem, but it must specify which specialist methods students will use and which claims each method can support. Joint teaching arrangements require agreed assessment ownership and a coherent language for grading across faculties. A programme that adds courses from several departments without an integrative design remains multidisciplinarily assembled rather than educationally interdisciplinary.

## 4.12 Recognition of prior learning, micro-credentials, flexible pathways, and stackable qualifications

Recognition of prior learning (RPL) begins from a defensible principle of fairness: relevant knowledge and capability may be acquired through formal, non-formal or informal learning, and requiring a learner to repeat already demonstrated attainment can be unnecessary and exclusionary. Yet fair recognition is not the granting of academic credit for experience as such. A programme should require appropriate evidence that the applicant has achieved the relevant outcomes at the required level, with sufficient currency, authenticity and breadth. Years of service, employer endorsement, a course certificate or a professional title may provide useful context without independently establishing equivalence. The RQF provides an architecture for recognition and qualification pathways, while specific institutional and regulatory rules determine how the principle can be enacted (Republic of Rwanda, 2021).

A credible RPL process begins with a published policy setting out eligibility, advice, evidence, fees where authorised, assessment standards, credit limits if applicable, decision rights, moderation, records and appeal. Evidence may include supervised performance, portfolios, authenticated work products, examinations, oral questioning, professional licences and records of prior accredited study. Assessors should make an explicit equivalence judgement against identified outcomes and level descriptors rather than rely on a holistic impression. Where an applicant demonstrates extensive vocational skill but lacks necessary theoretical foundations, partial recognition combined with bridging learning may be more educationally responsible than either full exemption or complete repetition.

RPL decisions should distinguish credit transfer from credit awarded for assessed prior experiential learning. Credit transfer ordinarily concerns documented attainment from another provider; experiential RPL requires the receiving institution to assess demonstrated knowledge and performance against the destination programme's outcomes. Neither route should be used to bypass a prerequisite that is academically indispensable, even when the applicant's

overall experience is impressive. A defensible decision records the assessor's rationale, authenticity checks, any required reassessment, implications for the learner's sequence and the reasons for accepting or refusing credit. Moderation and appeal processes matter because inconsistent discretionary decisions can compromise fairness and qualification comparability.

**Micro-credentials** can record focused learning achievement and provide flexible opportunities for professional development. UNESCO's discussion of a common definition and the European Union's 2022 recommendation emphasise transparency about outcomes, assessment, workload, quality and recognition arrangements (Oliver, 2022; Council of the European Union, 2022). These are comparative sources, not instruments that automatically authorise credit transfer into a Rwandan degree. A badge issued after attendance at a short online seminar is not equivalent to a credit-bearing university assessment merely because the two use the word credential. Universities should state the awarding organisation, level, actual credit status, assessment evidence, learner identity verification, quality-assurance arrangements, record retention and conditions under which a micro-credential may count towards a larger award.

**Stackability** should be designed prospectively and governed explicitly. A set of short units may correspond to part of a qualification only if credit, levels, outcomes, assessment standards and award rules are academically coherent and the appropriate authority permits accumulation. The problem of double counting is particularly serious where overlapping short courses award the same competence under different names. Programme specifications should define permissible combinations, credit ceilings, currency rules, prerequisites and progression. Flexible entry must not conceal a reduction in exit standards. A student entering through RPL should face the same defensible award-level expectations as a student following the conventional pathway.

Flexibility also has an economic and pedagogical dimension. Modular or part-time pathways can help working adults, caregivers, rural learners and internationally mobile students, but extensive flexibility may weaken cohort integration, timely feedback or access to practical facilities if not designed carefully. The institution should test advising, timetabling, student-record interoperability, availability of modules over time and support for interrupted study. A promised self-paced programme can become a maze of unavailable prerequisites and uncertain assessment windows. Curriculum quality demands that the actual sequence offered to learners, not merely the ideal sequence printed in a brochure, provides a viable route to completion.

## 4.13 Developing programme specifications, module descriptions, teaching plans, and assessment matrices

Programme documentation serves three audiences that should be kept analytically distinct: the institution that must implement an agreed academic design, the learner entitled to accurate programme information, and the regulator or reviewer assessing a particular qualification claim. Documentation becomes useful when it is simultaneously complete, internally consistent, controlled and intelligible. HEC provides forms and guidance for programme proposals, programme specifications and module descriptions through its accreditation portal. These remain important operational references, but an institution must verify the applicable edition and approval procedure instead of assuming that every historically posted document reflects the latest legal requirements (Higher Education Council, n.d.-a, n.d.-b; Republic of Rwanda, 2026).

A **programme proposal** explains why the institution wishes to introduce or substantially change an award, what evidence establishes relevance, how the qualification fits its mission and regulatory context, and whether the resources and approval pathway are adequate. A **programme specification** defines what the authorised educational offer actually is: award name and level, credits, duration, mode, entry and progression, graduate profile, learning outcomes, module structure, assessment and quality-assurance arrangements. **Module descriptions** translate that offer into specific, achievable learning activities and assessment arrangements. **Teaching plans** organise the anticipated student experience over time. **Assessment matrices** demonstrate how learning outcomes are examined

at appropriate points, with suitable criteria and moderation. Their purposes differ, but contradictory statements across them are a sign of unmanaged curricular risk.

An effective specification begins with an unambiguous programme identifier and controlled version. It records the degree-awarding institution and academic unit, proposed award, governing qualification framework, legally relevant delivery modality, applicable professional requirements, responsible academic authority, proposed first intake, duration and credit volume. It then states the educational rationale, consultation basis, graduate profile and PLOs, and includes the programme structure with every module code, title, credit and term. Admission, RPL, progression, assessment, appeals, placement, dissertation or capstone, accessibility and student-support arrangements must not be left to informal assumptions. Requirements should be documented with the appropriate sources and final approval status; no draft should be labelled accredited merely because internal deliberation has concluded.

A module descriptor should articulate its role in the programme before listing weekly topics. It needs a unique code, precise title, allocated credits, year and term, any prerequisites, delivery mode, module outcomes, thematic content, teaching and learning methods, notional-hour breakdown, assessment components and their outcome mappings, reading resources, learning support and staff responsibility. Where a laboratory, field placement or protected dataset is necessary, its use and capacity should be specified. Assessment weights must reconcile to the total and rules for reassessment or mandatory pass components must be consistent with approved regulations. An AI-use policy should be expressed at assessment level where necessary, with clear disclosure expectations and due process, rather than a blanket slogan about academic honesty.

Version governance is essential because a curriculum changes through many hands. One programme proposal may use a former title, the specification an updated title and several module descriptors an obsolete allocation. The HEC (2026a) distance-learning guidance adds a specific operational reference when the programme uses distance provision; its version and relevance to the proposed mode must be verified. An institution should identify a master module register, assign document owners, keep a change log and subject material modifications to authorised academic review. Checks should detect duplicated codes, missing or unexpected modules, conflicting term labels, unmatched credits, non-existent prerequisites, inconsistent assessment weights and unassigned learning outcomes. A controlled template can prevent predictable defects, but it cannot determine intellectual relevance, practical feasibility or the validity of an assessment. Automation is valuable for reconciliation, not the replacement of academic judgement.

The following six instruments form the proposed **Programme Development and Curriculum Review Toolkit**. The CAST (2024) Universal Design for Learning framework offers a useful, non-binding reference when examining whether these design decisions create meaningful participation for diverse learners. They are designed for adaptation by institutional programme teams and evaluators, not as replacements for HEC forms. Their professional value lies in revealing specific unanswered questions and preserving the chain between curricular claims and their evidence.

### 4.13.1 Programme-needs and justification record

The programme-needs instrument should produce a reasoned academic decision rather than a collection of letters and statistics. Its controlled record identifies the proposed educational problem, affected populations, disciplinary and public relevance, the exact sources examined, their dates and limitations, and plausible alternative responses. The team should distinguish evidence of current interest from evidence of graduate demand and from requirements established by law or a regulated profession. Table 4.2 provides the evidentiary streams; the completed record should name the claim each source supports and flag contested or missing information.

Its most valuable output is an institutional decision memo explaining why the proposed award is preferable to renewing an existing programme, offering a minor, developing non-award study or entering a partnership. The memo should identify reasons that might require the decision to be revisited, the committee responsible for that

review and the date at which new evidence is expected. When data are absent, uncertainty should remain visible rather than be disguised by an unsupported numerical forecast. This makes the instrument useful both before programme authorisation and during later renewal.

### 4.13.2 Graduate-competency and qualification-level profile

The graduate profile links programme purpose with the knowledge, methods, judgement and dispositions expected at exit. For each competency domain, the profile should identify its conceptual foundation, application context, level of independence, ethical or public responsibilities and suitable demonstration of attainment. The profile is not merely an employer survey transformed into outcomes. Academic specialists must judge its intellectual sufficiency, while professional bodies, employers, learners and student-support services can interrogate relevance, accessibility and plausibility. Table 4.3 demonstrates how these expectations can be framed.

A useful profile also specifies development from entry to graduation. For example, a claim that graduates will undertake reliable applied research should be linked to introductory source evaluation, progressively more demanding inquiry, structured feedback and a defensible final assessment. Reviewers should challenge any graduate attribute that is invoked in marketing but has no identifiable learning or assessment pathway. Where different disciplines share an attribute such as ethical judgement, its performance standard should be expressed in the authentic forms of that discipline, rather than assumed to be identical across programmes.

### 4.13.3 Controlled module-sequencing and workload map

The module-sequencing instrument should serve as the single authoritative record for codes, titles, credit allocation, year, teaching term, prerequisites, co-requisites, module ownership, principal assessments and intended learning-hour distribution. Automated validation can check uniqueness, arithmetic, prerequisite cycles and consistency with programme-specification documents, while subject specialists judge whether foundational knowledge is adequate and whether the sequence genuinely increases independence. Table 4.4 offers the developmental distinctions that a curriculum committee can use in reviewing the map.

The workload analysis should then examine the student experience in an actual academic calendar. A programme that totals 120 credits annually may still schedule laboratory access, placement days and major submissions impossibly within one teaching period. Reviewers should build a term-by-term assessment calendar, check concurrency and identify periods of exceptional demand; staff workload and resource capacity must be evaluated against the same schedule. The record should indicate its version and responsible custodian so that changes to one module trigger checks on every dependent module and assessment.

### 4.13.4 Programme-to-module constructive-alignment register

A defensible alignment instrument follows each programme learning outcome into the module outcomes through which it is introduced, practised with feedback and assessed at the award standard. Table 4.5 demonstrates a concise top-level register, but an operational institutional version should specify actual module codes, assessment briefs, grading criteria, programme-year positions and evidence identifiers. The objective is to establish what students are required to demonstrate, rather than to make a visually dense matrix appear complete.

The reviewer should look deliberately for negative evidence. If a critical outcome is absent from the final assessment programme, a matrix full of introductory ticks cannot establish graduate competence. If a demanding assessment occurs before students receive the requisite teaching or feedback, alignment is also deficient. Where the same outcome is assessed repeatedly, the team should demonstrate increasing cognitive demand rather than the reproduction of an unchanging task. For high-stakes assessment, an additional record should explain moderation, acceptable individual evidence, accessibility and permitted AI assistance.

### 4.13.5 Curriculum-coherence and evidence-sufficiency diagnostic

Curriculum review benefits from a structured diagnostic, but a numerical average must not be mistaken for an accreditation judgement. The proposed instrument in Table 4.6 separates the academic object of the claim, the documentary or operational evidence needed and the kinds of deficiency that have significant consequences for an award. A reviewer should record **adequate** only where the evidence supports the specified test, **revision required** where a deficiency has been established, and **not established** where a reliable conclusion cannot yet be made. These descriptors are authorial review categories, not HEC-assigned ratings.

Each finding should include a concise evaluative warrant: why the observed evidence supports the stated conclusion against the correct standard. The record should identify an accountable owner, a proposed corrective action and the evidence required to verify closure. Award-level failure, absence of safe compulsory practical training or a wholly unassessed essential competence must receive independent attention rather than be offset by strong scores in other domains. Conversely, a minor typographic inconsistency should not be inflated into a critical academic finding. This proportionate and non-compensatory reasoning provides an operational bridge to ETAJ, while reserving formal accreditation decisions for the competent authority.

**Table 4.6**

*Curriculum-coherence diagnostic for internal validation*

| Diagnostic domain | Test applied to the actual programme | Appropriate evidence | High-consequence deficiency |
|---|---|---|---|
| Rationale and public value | Does the qualification address a defensible need? | Needs analysis, alternatives appraisal, consultations | Unsupported or misleading programme promise |
| Level, credits and duration | Does the award meet applicable framework and approved rules? | Operative RQF, controlled credit register, calendar | Wrong award level or unlawful credit/duration configuration |
| Graduate capability | Are PLOs substantial, level-appropriate and assessable? | Graduate profile, disciplinary review | Claimed qualification has no credible achievement standard |
| Content and progression | Are essential domains sufficiently covered and sequenced? | Detailed descriptors, prerequisite and coverage maps | Missing foundational competence or impossible progression |
| Constructive alignment | Are outcomes developed and directly assessed? | PLO/MLO map, briefs, rubrics and samples | Critical outcomes never genuinely assessed |
| Practical provision | Can placements, laboratories and research be delivered safely? | Agreements, capacity evidence, supervision plans | Unavailable or unsafe mandatory practical learning |
| Staffing and resources | Are actual named staff and resources adequate for the cohort? | Verified assignments, contracts, workload, access tests | Critical specialist function or resource absent |

| Diagnostic domain | Test applied to the actual programme | Appropriate evidence | High-consequence deficiency |
|---|---|---|---|
| Inclusion and academic integrity | Can students access, demonstrate and contest learning fairly? | Accessible designs, assessment policy, support processes | Predictable exclusion or untrustworthy individual evidence |
| Regulatory and version control | Does the submitted design match approved authority and forms? | Standards register, internal decisions, document master | Conflicting submissions or unauthorised claims |

*Note.* Original proposed professional instrument. A finding should state the applicable source, observed evidence, reasoning, uncertainty, necessary correction, owner and verification date.

### 4.13.6 Controlled model programme specification

A programme specification must be readable as an authoritative description of the academic offer, rather than an anthology of independently drafted sections. The fields in Table 4.7 connect the award's legal identity, educational case, graduate standards, module architecture, assessment, learner pathways, resources and quality arrangements with the records through which each claim can be verified. A model specification can improve completeness, but the edition and status of any HEC-issued form take precedence whenever such a form is currently operative.

The institution should issue a definitive controlled version after the appropriate internal approvals and record the status of any outstanding external authorisation separately. The specification, proposal, module descriptors, timetable and student-facing information should be reconciled against the same module register, with an audit trail for substantive change. Responsibility for preserving the original approval baseline must remain clear when programmes expand across campuses or delivery modalities. The purpose of this control is not clerical tidiness: it prevents students, departments and regulators from relying on incompatible versions of the same promised qualification.

**Table 4.7**

*Model programme specification register*

| Specification component | Essential controlled content | Source or verification route |
|---|---|---|
| Award identity and authority | Name, institution, academic unit, RQF level, awarding powers, status | Founding/approval instrument, current RQF, regulatory register |
| Educational case | Evidence of need, comparator logic, mission and public value | Needs register and approved concept paper |
| Graduate outcomes | Aim, attributes, PLOs, level demand | Profile and external academic advice |
| Curriculum architecture | Modules, codes, credits, prerequisites, terms, total hours | Single master register and reconciled diagrams |
| Learning and assessment | Pedagogy, placement, capstone, mapping, rubrics, feedback | Course plans, moderation and assessment blueprints |
| Learner pathway | Entry, RPL, credit transfer, progression, graduation, student support | Approved academic rules and service plans |

| Specification component | Essential controlled content | Source or verification route |
|---|---|---|
| Implementation resources | Named staffing, library, ICT, infrastructure, placement, finances | Contracts, capacity tests, budget, partner agreements |
| Governance and quality assurance | Internal approvals, version, monitoring and modification responsibility | Senate/board records as applicable; HEC status verification |

*Note.* Original authorial adaptation for professional planning; the actual Rwandan submission must follow the currently applicable HEC forms and instructions.

The toolkit should operate as a linked set rather than six independent appendices. The needs record explains why a capability is proposed, the graduate profile names that capability, the sequencing map shows how it develops, the alignment matrix shows where it is assessed, the diagnostic tests for defects, and the specification consolidates the approved design. If a graduate competency changes, that decision should trigger review of module content, staffing, assessment and regulatory implications. This is the operational meaning of evidence-traceable curriculum governance.

## 4.14 Internal curriculum validation, external review, evidence of implementation readiness, and regulatory submission

Internal validation is the moment when an institution must challenge its own educational proposal rather than certify that a team has completed the paperwork. A defensible sequence begins with departmental disciplinary review, proceeds through independent academic and cross-functional evaluation, and culminates in decisions by the competent academic and governing organs as provided in the institution's current statutes and regulations. It ordinarily requires evidence of award-level integrity, sound need, curricular coherence, staffing and resources, assessment, student protection and financial feasibility. Rwanda's HEC accreditation portal supplies programme forms and historically published validation procedures. Their precise current applicability must be checked against the institution's operative academic rules and HEC's governing instruments, especially Presidential Order No. 044/01 of 24 July 2026 (Higher Education Council, 2007, n.d.-a; Republic of Rwanda, 2026).

The important distinction is between **endorsement, approval, and readiness**. A department may endorse an educational concept; an academic board may approve the internally controlled programme design; management may authorise resources; and the external regulator may exercise a legally required approval function. None of these acts automatically establishes that teaching staff have been appointed, required library holdings are available to students, placement sites can accept the cohort or digital assessment workflows have been tested. An institution should therefore introduce a final programme-specific readiness gate before recruitment or launch. Its evidence should identify actual allocated staff, feasible workload, constructed module materials, library access, practical capacity, student-support routes, accessibility tests, assessment safeguards and contingencies. A launch plan is not proof that launch conditions exist.

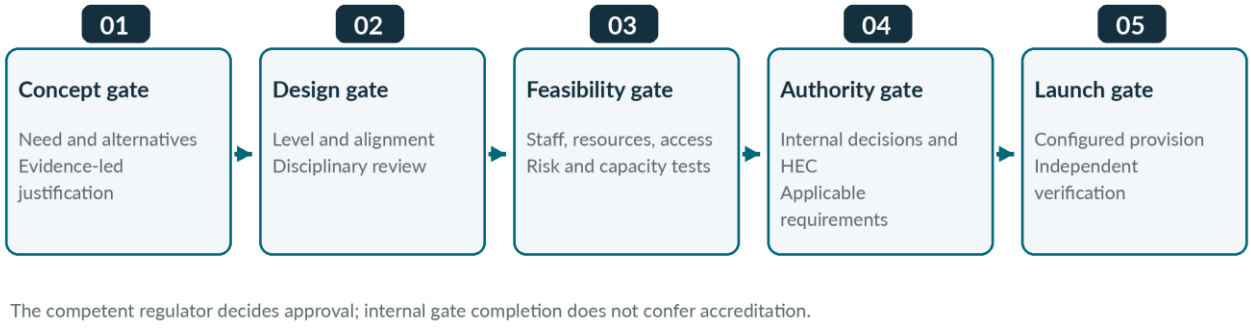
Internal review should be critical without being adversarial. Independent reviewers need an explicit mandate, relevant disciplinary and educational expertise, access to the complete current programme record, declaration of conflicts and freedom to record unresolved disagreements. Institutions should separate errors that can be corrected editorially from deficiencies affecting intellectual standards, student safety, award legality or implementation feasibility. When evidence is incomplete, the report should state "not established" rather than infer compliance from institutional confidence. The review minute should record the finding, its grounds, required action, accountable owner, deadline and verification evidence, so that the programme team is not left to guess how a condition will be cleared.

External consultation and regulatory submission should follow the same evidence discipline. An expert may recommend revisions and an internal academic authority may validate them, but the regulatory decision belongs to the legally competent body. In the dossier, the module register, programme specification and proposal must describe exactly the same award. A reviewer should be able to locate each stated PLO in the alignment matrix, inspect the assessment tasks intended to establish it, reconcile all credits and identify the resources needed to implement it. This is the curriculum-level preparation for ETAJ: the applicable requirement, institutional claim, supporting evidence, verification and evaluative warrant are deliberately separable rather than concealed inside a single assertion that the programme is "ready" (Sangwa, 2026).

Figure 4.2 identifies the review gates that should connect institutional validation with evidence of launch readiness. The gate sequence is a proposed professional method, not a depiction of a legally prescribed HEC approval route.

**Figure 4.2**

*Evidence-gated programme validation and readiness sequence*




*Note.* Original conceptual diagram by the author. Relationships are proposed professional reasoning aids rather than established causal mechanisms or official HEC processes.

### 4.14.1 Context and limits of the hypothetical programme

The following case is an integrated, constructed curriculum-design illustration, not an existing institution, completed needs assessment, HEC decision or approved award. Its purpose is to demonstrate how an academic team can move from a plausible concept towards an internally validated and externally reviewable submission while preserving uncertainty about actual authorisation. All module titles, codes, sequencing decisions, assessments and resources are illustrative and would require a real institution's disciplinary, financial, legal and practical evaluation.

### 4.14.2 Educational need and programme rationale

Assume a Rwandan teaching-oriented university proposes an applied bachelor's programme intended to prepare graduates to examine enterprise problems through business theory, quantitative evidence, responsible digital technology and practical innovation. The concept responds to a reasonable but still unverified institutional hypothesis: some organisations and entrepreneurs may benefit from graduates able to connect business decisions, data analysis and ethical technology governance. The hypothesis is not presented as an empirical finding or a demonstrated labour-market shortage. Before approval, the programme team would need to analyse current national priorities, relevant economic and educational evidence, actual prospective-student demand, available comparator programmes and employer/community perspectives, recording their provenance and limitations. It would also need to show why a degree offers greater educational value than revising an existing business or information-systems award or supplying a short professional course.

For this illustration, the programme's proposed evidence record should separate policy alignment, scholarly justification and projected programme viability. Policy alignment would require the team to identify precisely

which public objectives are relevant to digital enterprise rather than cite an entire strategic document. Scholarly justification would require assessment of the enduring business, quantitative and information-systems knowledge that a Level 8 graduate needs. Viability would require independently defensible assumptions about prospective enrolment, competition, student costs, staffing and ongoing technology maintenance. Because these analyses have not been conducted for the constructed case, their potential outputs are specified as questions and documents to be produced, not as favourable findings.

The imagined consultation record would also need to investigate countervailing evidence. A demand for proficiency in a currently fashionable analytics platform might favour short-course training instead of an entire degree; a need for reliable financial or statistical judgement, by contrast, would justify advanced conceptual foundations. The programme's distinctiveness would need to be tested against existing business administration, information systems and entrepreneurship pathways. Approval should depend on an academically reasoned explanation of that distinctiveness, not on the novelty of the programme title or an unsupported forecast of employment.

### 4.14.3 Award architecture and graduate attributes

The proposed qualification is a four-year bachelor's degree aligned provisionally to RQF Level 8 and 480 credits, following the 2021 RQF's general higher-education structure. This yields 4,800 notional learning hours across four years at an illustrative 1,200 hours per academic year. The designation and internal subject architecture would require confirmation under current HEC and institutional rules, including whether the final approved programme may use the selected name and award description. Its graduate profile combines six domains: P1 disciplinary business and quantitative reasoning; P2 critical research and evidence use; P3 applied enterprise innovation; P4 ethical digital and data governance; P5 professional communication; and P6 sustainability, reflective learning and responsible judgement. The domains are designed to integrate scholarship and practical capability without asserting that any specific employer has endorsed them.

The six proposed programme outcome domains must eventually be translated into precise exit-standard claims. P1 would require evidence that a student can draw on established economic and management theory when interpreting unfamiliar enterprise cases; P2 would require defensible inquiry and analysis; P3 would require feasible applied design; P4 would require reasoned governance of data and technology; P5 would require intelligible communication to different audiences; and P6 would require evaluation of longer-term social and environmental consequences and a reflective learning response. To establish equivalence with the qualification level, academic reviewers should scrutinise the complexity of the tasks and moderation standards, not merely the verbs chosen for the outcomes.

### 4.14.4 Modules, credits and academic sequencing

Table 4.8 sets out a complete, arithmetically balanced illustrative structure. Each ordinary module carries 15 credits, corresponding to 150 notional hours; the final capstone carries 30 credits, corresponding to 300 hours. Years 1 to 3 each contain eight 15-credit modules. The final year contains six 15-credit modules and a 30-credit capstone. Thus the total is thirty ordinary modules (450 credits) plus one capstone (30 credits), yielding 31 module records and 480 credits. An actual timetable would require allocation by approved semester or trimester pattern and further review of academic-calendar constraints, assessment density and staff availability. The table deliberately distinguishes the indicative year from any assertion that the programme is authorised for a specific term structure.

**Table 4.8**

*Complete illustrative 480-credit programme register*

| Academic year | Proposed modules and codes | Credit reconciliation | Developmental purpose |
|---|---|---|---|

| Academic year | Proposed modules and codes | Credit reconciliation | Developmental purpose |
|---|---|---|---|
| Year 1 | DE101 Academic Inquiry and Evidence; DE102 Digital Foundations and Systems; DE103 Business and Society; DE104 Quantitative Reasoning I; DE105 Principles of Economics; DE106 Communication and Argumentation; DE107 Accounting for Decisions; DE108 Programming Fundamentals | 8 × 15 = 120 | Foundational disciplinary vocabulary, evidence judgement, communication and quantitative capability |
| Year 2 | DE201 Quantitative Reasoning II; DE202 Data Management; DE203 Marketing and Consumer Evidence; DE204 Business Law, Regulation and Intellectual Property; DE205 Programming for Analytics; DE206 Operations and Supply Chains; DE207 Research Design and Ethics; DE208 Human-Centred Service Design | 8 × 15 = 120 | Methodological development, contextual business analysis, controlled research practice and initial design integration |
| Year 3 | DE301 Statistical Inference and Modelling; DE302 Enterprise Finance; DE303 Cybersecurity and Data Protection; DE304 Digital Platforms and Commerce; DE305 AI and Responsible Business; DE306 Sustainable Enterprise and Social Impact; DE307 Work-Integrated Learning; DE308 Strategic Analysis and Decision-Making | 8 × 15 = 120 | Cross-disciplinary application, supervised practice, ethical risk evaluation and increasingly independent analysis |
| Year 4 | DE401 Governance and Risk; DE402 Advanced Analytics and Evidence Appraisal; DE403 Entrepreneurial Innovation Studio; DE404 Organisational Change; DE405 Applied Research Seminar; DE406 Technology Policy and Professional Ethics; DE407 Capstone: Applied Research and Enterprise Design | 6 × 15 + 30 = 120 | Integrated judgement, research independence, professionally defensible recommendations and sustained capstone work |
| **Total** | **30 ordinary modules + 1 capstone** | **450 + 30 = 480** | **Qualification-level progression subject to validation and regulatory approval** |

*Note.* All titles, codes, year allocations and educational claims are hypothetical. The 2021 RQF provides the Level 8 and general credit reference; it does not approve this constructed award (Republic of Rwanda, 2021).

The 31 records reconcile numerically, but a complete set of 31 authorised module descriptors and actual staff, facility and assessment records would still have to be prepared by the institution. Module titles cannot establish disciplinary breadth, assessment demand or adequate contact with scholarship. Before formal consideration, the curriculum team should test whether economic theory, accounting, business law, quantitative methods, information systems, entrepreneurship and ethical practice each receive sufficient coverage for a defensible Level 8 award. Its currently illustrative module list is an architectural hypothesis, not proof of academically validated content.

### 4.14.5 Prerequisites and academic progression

The architecture assumes DE104 precedes DE201 and DE301, DE108 precedes DE205 and DE402, DE202 supports DE301 and DE402, and DE207 precedes DE405 and the capstone. DE303 and DE305 contribute to the ethical assessment expected in DE401 and DE406. Workplace learning in DE307 should be preceded by appropriate safety, research ethics and professional induction. These dependencies should be explicitly listed in

each module descriptor and reconciled with progression rules. A student arriving through RPL or transfer would need to demonstrate the relevant equivalent knowledge before entering advanced modules; the institution must not infer that previous credit volume necessarily establishes every prerequisite.

The provisional model assumes two teaching semesters, not because the RQF mandates this particular scheduling structure, but to make feasibility testable. In each of Years 1 to 3, four 15-credit modules are assigned to each illustrative semester. The final year would assign DE401 to DE404 to Semester 1, and DE405, DE406 and the 30-credit DE407 capstone to Semester 2. This configuration creates a potential feasibility concern: completing a rigorous capstone within the same semester as two taught modules may require preliminary topic selection, early ethics planning and tightly resourced supervision. If capstone preparatory activity begins before Semester 2, that planning must not obscure the authorised credit and assessment allocation. The institution should therefore document the permissible calendar, timing of proposal approval, and opportunities for revision, rather than equating equal semester credits with equal weekly learning demands.

A prerequisite register should include more than a list of modules taken earlier. It should record the exact competence assumed, the module or authorised alternative that develops it, and the assessment evidence showing that the competence has been achieved. DE301, for example, should identify the statistical and data-handling expectations inherited from DE104, DE201 and DE202. Admission through an alternative pathway should trigger the same capability test rather than an automatic waiver based on the number of transferred credits. Such transparency would reduce avoidable failure in advanced modules while retaining legitimate recognition of earlier learning.

### 4.14.6 Notional learning and delivery feasibility

In DE301, a proposed 15-credit workload could allocate 36 hours to structured teaching and supervised practice, 54 to guided analysis and reading, 36 to independent datasets and inquiry, and 24 to assessment and revision, totalling 150 hours. The hours are a transparent planning assumption, not a national prescription of contact-hour percentages. For DE307, workplace hours would depend on the official attachment framework, academic learning outcomes and actual host arrangements. For DE407, the illustrative 300 hours would include supervised proposal refinement, evidence collection or ethically appropriate analysis, synthesis, writing and defence. Before approval, the programme team must test whether an actual student can undertake these activities alongside concurrent modules and whether the university can supervise the necessary work.

The semester arithmetic has a second interpretation that cannot be ignored. A hypothetical 600 notional hours spread across a 15-week semester equates to 40 hours per week, while the same volume across 12 teaching weeks equates to 50 hours per week. Neither calculation is a prescription for contact time; each is a feasibility signal that becomes decisive only after the institution states its actual calendar, break periods, structured learning, independent work, placement scheduling and learner population. Programme teams should therefore document the assumptions underlying the weekly demand, including travel, access to computing resources and the distribution of assessment deadlines.

### 4.14.7 Assessing progressive attainment

Consider P2, critical inquiry and evidence. DE101 introduces source evaluation; DE201 and DE202 develop quantitative reasoning and data provenance; DE207 assesses research design and ethical justification; DE301 tests modelling and interpretation; DE405 requires a defensible research proposal; and DE407 provides a supervised final inquiry with an oral defence. The exit standard should require appropriate question formulation, method selection, documented data integrity, critical engagement with conflicting explanations, transparent limitations and an evidence-based conclusion. A map asserting that DE407 assesses P2 is insufficient unless a real assessment brief, marking rubric, supervision framework and verification plan demonstrate how it will do so.

For P4, responsible digital governance, DE204 introduces legal and regulatory reasoning; DE303 addresses privacy and security; DE305 examines AI errors, bias and oversight; DE401 integrates risk analysis; and DE406 requires students to justify a technology-policy recommendation under competing stakeholder interests. An assessment might present a synthetic case involving an enterprise's proposed use of customer data in an automated decision system. Students would identify relevant risks, argue for feasible controls, explain remaining uncertainty and recommend an accountable decision. This is stronger evidence than asking students to name ethical principles without applying them. The legal accuracy of specific compliance questions would need to be checked against current Rwandan law and applicable sectoral rules before real delivery.

P3, P5 and P6 also need authentic assessment pathways. P3 could culminate in a documented prototype or enterprise intervention whose feasibility is tested against operational and financial constraints, with the student required to defend design choices. P5 should be assessed not simply by the grammatical fluency of a presentation but by the accuracy, audience suitability and responsiveness of an explanation under questioning. P6 could be tested through a proportionate impact analysis identifying sustainability trade-offs and a reflective plan showing how critical feedback affected the student's judgement. These are proposed assessments only; the institution would still need to issue rubrics, specify academic standards and verify that students are given sufficient opportunities to prepare.

### 4.14.8 Example of a module and assessment blueprint

DE402, *Advanced Analytics and Evidence Appraisal*, is provisionally a Year 4, 15-credit module. Its educational purpose is to enable independent evaluation of quantitative claims used to inform enterprise decisions, rather than training students merely to operate a software dashboard. Illustrative MLOs would require students to evaluate modelling assumptions and limitations; select and defend appropriate methods for a bounded business question; interpret uncertainty and possible bias; and present a defensible recommendation to a non-specialist decision-maker. Learning activities could combine reproducible analytic notebooks, critique of published empirical findings, supervised methodological clinics and discussion of ethically constructed datasets. An assessment blueprint might allocate 40% to a documented technical analysis, 40% to a critical decision memorandum and 20% to a moderated oral explanation, provided that the institution's approved rules permit this structure. The assessment-specific AI guidance would distinguish permitted support from impermissible substitution for independent reasoning. Students with relevant access needs would require equivalent opportunities to demonstrate achievement, and the university would need to confirm suitable software, devices, data governance and academic staffing before delivery.

For DE402, the programme-to-module assessment argument should go beyond the total of 40%, 40% and 20%. The technical analysis should require a reproducible method, defensible handling of missing or biased data, and accurate interpretation of uncertainty. The decision memorandum should test whether students can translate the same findings into proportionate professional advice, and the oral element should check their independent explanation of consequential analytical choices. A common rubric could distinguish conceptual accuracy, methodological suitability, evidential transparency, ethical appraisal and quality of justified recommendation. Markers would need shared standards and a moderation procedure; the weighting alone provides no evidence of valid or reliable assessment.

### 4.14.9 Institutional conditions and readiness evidence

A compelling programme register cannot establish whether the host institution has the capability to offer it. The programme team would need a verified staff deployment schedule showing disciplinary qualifications, contracts, module assignments and workload, including provision for supervision and absence. The library would need current and appropriately licensed resources across business, statistics, information systems, ethics and methods. Computing arrangements would have to support students' actual devices and access conditions; DE307 would need credible placement agreements and mentor capacity; DE407 would require suitably qualified project supervisors, research oversight and moderation arrangements. The institution would also need accessible learning materials,

academic advising, effective assessment appeals, financial provision for the full cohort lifecycle and continuity plans for technology or partner failure. None of this implementation evidence has been produced in the hypothetical case, so readiness remains unestablished.

Evidence for readiness should be matched to the actual proposed cohort and operating model. If the institution anticipates several parallel groups, capacity must be calculated against their combined demand for computing facilities, assessment feedback, library licences and academic consultation. For DE307, the number of suitable placement positions should be compared with students eligible for the placement in the same period, and alternative approved pathways should be specified if hosts withdraw. For the capstone, the programme should model supervision assignments, faculty research specialisms, staff absences and moderation loads before concluding that the programme can sustain its advertised graduate standards.

### 4.14.10 Conditional internal judgement and corrective action

A hypothetical faculty review could make a conditional academic recommendation after examining programme relevance, PLO quality, code uniqueness, prerequisite logic and credit arithmetic. Conditions could include independent disciplinary scrutiny of DE402's methodological level; demonstration of sufficient placement hosts; completion of the DE407 supervision and assessment blueprint; confirmation of the current regulatory requirements for the award name and delivery mode; and a full timetable and cost review. The academic authority would record who must discharge each condition and what evidence constitutes closure. Only after the competent internal approvals and any legally required HEC actions, and only after a separate launch-readiness verification, could the institution accurately describe the programme as approved and ready. In this example, no such approvals have occurred, and there is no factual basis to recommend or claim regulatory accreditation.

At the end of the design exercise, the hypothetical internal panel should not issue an unqualified declaration of readiness. The most defensible illustrative disposition is that the concept and credit arithmetic merit further detailed evaluation, while programme level, assessment implementation, placement provision and operational capacity remain subject to evidence. A genuine institutional review could reach a different conclusion after inspecting the complete programme record and the applicable current rules. Thus the constructed example demonstrates a decision method rather than a model finding that can be reproduced irrespective of context.

A condition-closure record should be sufficiently precise that a reviewer can determine whether a response resolves the original deficiency. A requirement to establish placement capacity, for example, should not be marked complete merely because the university has initiated discussions with employers; it should identify suitable host commitments, available places, supervision arrangements, insurance or safety provisions where applicable, and procedures for resolving a failed placement. The corrective-action owner should supply the relevant dated evidence, a distinct reviewer should verify adequacy when feasible, and the governing academic authority should record the resulting disposition. The example makes these verification standards explicit while leaving any eventual accreditation recommendation undecided.

### 4.14.11 Accreditation dossier and evidence traceability

An appropriate submission pack would connect the authorised proposal and current programme specification with the complete set of 31 controlled module descriptors; a six-PLO curriculum and assessment map; the 480-credit reconciliation; a realistic delivery calendar; staff and supervision records; library, infrastructure and ICT evidence; workplace-learning arrangements; student support and accessibility plans; financial and risk analysis; the internal validation report; and a register of unresolved questions. Each record should carry an owner, version, source and applicable normative reference. Reviewers must be able to distinguish supporting evidence from promises and proposed improvements. Table 4.9 illustrates how a few consequential claims could be analysed without pretending to have verified them.

**Table 4.9**

*Evidence-traceable review of the hypothetical programme*

| Claim to be evaluated | Required documentary or operational evidence | Appropriate current disposition in this example |
|---|---|---|
| The award meets the intended RQF level and credit volume. | 2021 RQF, 31-module master register, level descriptors, academic calendar, assessment complexity | Arithmetic reconciles; level and applicable approval still require expert/regulatory scrutiny. |
| Graduates will demonstrate independent evidence-based judgement. | P2 mapping, DE207/DE405/DE407 briefs and rubrics, qualified supervision, moderation plan | Plausible design; actual assessment and supervision evidence not yet verified. |
| Students will gain adequate practical experience. | DE307 outcomes, host agreements, mentor numbers, safety, monitoring and assessment arrangements | Not established; cannot be asserted from the module title alone. |
| The programme is institutionally ready to launch. | Staff appointments, resources, tested teaching and assessment environment, learner services and budget | Not established; must remain a separate pre-launch condition. |

*Note.* Original constructed illustration. Descriptors express the limits of available hypothetical information, not findings about a real institution.

The tentative year-level register also needs a programme calendar. Table 4.10 provides a provisional semester arrangement, with all semester calculations explicit, so that a reviewer can interrogate scheduling rather than infer a viable timetable from annual totals. Its function is diagnostic: a legitimate programme would still need actual teaching weeks, holiday periods, reassessment windows, staff assignments and placement availability.

**Table 4.10**

*Provisional semester-by-semester allocation of the hypothetical Level 8 programme*

| Year | Provisional semester 1: 60 credits | Provisional semester 2: 60 credits | Principal dependency to verify |
|---|---|---|---|
| Year 1 | DE101, DE102, DE103, DE104 | DE105, DE106, DE107, DE108 | Quantitative and digital foundations occur early enough for subsequent work. |
| Year 2 | DE201, DE202, DE203, DE204 | DE205, DE206, DE207, DE208 | Coding, data and inquiry prerequisites are sequenced for third-year work. |
| Year 3 | DE301, DE302, DE303, DE304 | DE305, DE306, DE307, DE308 | Placement follows academic and professional preparation; host capacity is confirmed. |
| Year 4 | DE401, DE402, DE403, DE404 | DE405, DE406, DE407 (30 credits) | Capstone preparation, supervision and concurrent learning are feasible. |

*Note.* Original illustration. Each semester totals 60 credits (600 notional hours); the Year 4 second semester combines two 15-credit modules and one 30-credit capstone. This scheduling is not verified against an academic calendar or endorsed by HEC.

A further readiness register should translate each unresolved condition into a verification requirement. Table 4.11 illustrates how an internal panel might differentiate correctable design work from institutional promises. The gate cannot be closed through verbal assurance or a future recruitment plan; it should be closed only when the specified evidence is produced, reviewed and recorded by the competent institutional officer.

**Table 4.11**

*Illustrative programme launch-readiness and condition-closure register*

| Readiness claim | Minimum evidence before closure | Interpretation in the constructed example |
|---|---|---|
| Academic award integrity | Applicable RQF and current programme rules; reviewed level descriptors; full module descriptors and PLO/MLO assessments | Credit arithmetic plausible; substantive academic-level review outstanding. |
| Teaching and supervision capacity | Named available and qualified staff; signed commitments; timetable and workload; capstone supervision plan | Not established by hypothetical module titles. |
| Placement provision | Documented host capacity, safe induction, supervision, accessibility and assessment arrangements for DE307 | Not established; a critical dependency for compulsory work-integrated learning. |
| Student and digital provision | Usable library licences, accessible course material, functional assessment workflow, student support and remedies | Not established; capability must be checked for the planned cohort. |
| Financial and continuity capability | Whole-programme costing, realistic enrolment scenarios, partner risk and teach-out protections | Not established; institutional sustainability requires independent review. |
| Lawful authorisation and launch | Current written internal decisions and any competent external approval, followed by programme-specific readiness verification | No authorisation or launch clearance is represented as having occurred. |

*Note.* Proposed professional review instrument, not an official HEC form; all dispositions are hypothetical and no actual evidence was inspected.

This worked programme demonstrates why validation should be evidence-gated. An academically attractive design may advance through concept approval while still requiring correction to content, prerequisites, assessment or resources. A programme should not be delayed for purely cosmetic perfection when it satisfies genuine requirements, but neither should it be allowed to enrol students on the strength of a plausible plan where foundational conditions of academic delivery remain unverified. The strongest curriculum review therefore distinguishes a remediable documentary omission, a substantive design weakness, an implementation shortfall and a legally disqualifying deficiency. The classification determines the responsible action, verification burden and permissible decision route; it does not predetermine the competent regulator's judgment.

## 4.15 Curriculum evaluation, renewal, programme modification, and academic closure

A curriculum that is sound at initial approval is not thereby guaranteed to remain educationally appropriate. Disciplinary knowledge develops, professional requirements change, emerging technology alters established tasks, students bring different preparation and institutional resources fluctuate. Curriculum governance must therefore continue across the programme lifecycle, moving from design review and launch monitoring to module evaluation, annual programme analysis, periodic external scrutiny and authorised renewal. Continuous enhancement is not a requirement that every module change each year. It is a responsibility to investigate evidence, preserve what works, correct what fails and justify material changes before implementing them.

Evaluation should distinguish *inputs*, *enactment*, *achievement* and *consequences*. Inputs include staffing and resources; enactment includes timetables, teaching, access, assessment and support actually received; achievement includes moderated student work and defensible progression; consequences include graduate transitions, research capabilities, community value and longer-term professional development where these can be meaningfully assessed. Student satisfaction is valuable evidence of experience but cannot establish academic mastery. Pass rates can signal problems, yet their interpretation requires awareness of admissions profiles, assessment integrity and

grading standards. Graduate employment may be relevant while remaining dependent on economic conditions beyond the university. A strong review therefore triangulates quantitative indicators with disciplinary scrutiny, samples of assessed work, student experience, external examiner reports, stakeholder evidence and systematic follow-up (Lattuca & Stark, 2009; Sangwa, 2026).

A renewal decision should begin by asking what the institution has learned rather than how many policy documents it has rewritten. A programme may reveal that entrants repeatedly struggle with a prerequisite, that a mid-programme placement arrives before students have sufficient preparation, or that assessed work meets technical criteria but lacks ethical reasoning. The committee should identify the cause it considers plausible, the competing explanation it has examined, the redesign it proposes and the evidence that would count as improvement. Where cohorts or assessment methods change, raw before-and-after differences should not be attributed automatically to the curriculum revision. A disciplined institutional review can be educationally valuable without claiming experimental proof.

Curriculum modification should be proportionate to its academic and regulatory consequences. A revised reading list, corrected typographical error or newly adopted teaching exercise may be managed through ordinary module enhancement when current rules permit. Changing the award title, total credits, required learning outcomes, delivery mode, compulsory placement, duration or substantial assessment architecture may require a higher level of internal authorisation and possibly notification or approval from HEC or another competent body. The institution should maintain a classification procedure that records the proposed change, educational rationale, affected cohorts, risks, student communications, authority consulted and effective version. Continuing students should not be subjected to retrospective alterations that unlawfully undermine the basis of their enrolment.

**Renewal** should examine the coherence of the entire award, not just the popularity of individual modules. A periodic panel can ask whether its educational justification still stands, the graduate profile remains defensible, foundational content is current, assessment measures the advertised outcomes, students can progress through the actual timetable and the institution still possesses suitable capability. Where emerging AI makes particular routine tasks inexpensive, the curriculum might strengthen conceptual reasoning, accountable verification and advanced application rather than delete foundational knowledge. Responsible renewal must be evidence-led rather than reactive to each new platform or employer fashion.

**Suspension or closure** is a curriculum responsibility as well as a financial or regulatory decision. A university proposing to discontinue an award must protect enrolled students' ability to complete or transfer appropriately, preserve valid assessment and award records, maintain necessary staff and services, and communicate clearly about the implications for recognition and professional pathways. Teach-out arrangements should identify module availability, alternatives, supervision, practical provision, support, completion times and responsibilities if a partner or technology supplier withdraws. Closure cannot be judged successful solely because future recruitment has stopped. Its quality must be assessed by what happens to students whose educational commitments remain outstanding.

The life-cycle perspective also exposes the boundary of this chapter's proposed instruments. A carefully designed programme map is evidence of planning, not proof that the taught curriculum corresponds to it or that graduates attain the claimed outcomes. A future empirical validation agenda would test whether users can apply the diagnostic consistently, whether identified problems predict material implementation difficulties, and whether the approach supports better educational decisions without excessive administrative cost. Until such research is completed, the toolkit should be regarded as a transparent, adaptable professional proposal. Its warrant is conceptual and practical, not a measured causal effect or a formal regulatory endorsement.

## 4.16 Conclusion: Curriculum quality as a traceable educational commitment

The central question in curriculum development is not how many modules a degree contains, but what coherent educational achievement their sequence makes possible and how that achievement can be justifiably recognised. A programme should begin with a credible account of educational and public need, develop a graduate profile worthy of its qualification level, protect disciplinary knowledge while integrating professional and ethical capability, and translate those commitments into sequenced opportunities, valid assessment and credible evidence. Rwandan qualification requirements and authoritative approval processes establish necessary constraints; institutional mission, scholarly judgement and contextual evidence determine how responsible educational choices are made within them.

The chapter has shown that four levels of judgement must remain separate: educational justification, design coherence, implementation readiness and enacted effectiveness. This distinction prevents curriculum documents from being mistaken for learning and prevents institutional assets from being mistaken for programme-specific capability. The proposed toolkit offers a practicable means to preserve the connections among needs evidence, graduate competencies, module sequence, assessment, resources and internal validation. Its hypothetical 480-credit programme illustrates both what a complete curriculum architecture can reveal and what cannot yet be concluded without actual institutional records and authoritative approval.

In the wider IETQG conception, curriculum development is the educational hinge between institutional capability and accountable programme delivery. The next analytical task is therefore not simply to move the approved documents onto an LMS. It is to show how the curriculum becomes a viable learning experience across online, blended and flexible environments, with appropriate interaction, accessibility, assessment, academic support and technological reliability. Those implementation conditions determine whether a well-justified programme can begin to fulfil its promise in the lives and work of actual students.

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