



# OLUMS

Intelligent Management  
and Tracking Systems

## Digitising ECSA-Aligned Engineering Work-Integrated Learning Through Structured Graduate Attribute Tracking on AWS

OLUMS implemented an AWS-hosted WIL platform for a South African University of Technology to align Engineering qualifications to the eleven ECSA Graduate Attributes (GA1–GA11).

The solution introduced a structured Engineering Assessment Matrix that improved competency tracking, assessment consistency, and accreditation readiness across Engineering Technician and Technologist programmes.

### Challenge

- Inconsistent assessment of ECSA Graduate Attributes across workplace learning environments
- Limited visibility into student competency progression and accreditation readiness
- Manual, fragmented engineering logbooks created auditability and compliance risks

### Solution

- Structured Engineering Assessment Matrix aligned to ECSA Graduate Attributes (GA1–GA11)
- Digitised WIL logbooks with real-time academic and workplace mentor oversight
- Centralised AWS-hosted platform for competency tracking, verification, and audit readiness

### Results

- Strengthened ECSA accreditation readiness through structured Graduate Attribute alignment
- Restored visibility and control over engineering competency assessment workflows
- Established a scalable, auditable framework for Engineering WIL across disciplines



### The Customer

The customer is a South African University of Technology delivering ECSA-aligned Electrical Engineering qualifications across both Engineering Technician and Engineering Technologist pathways.

The programmes require students to complete structured Work-Integrated Learning (WIL) within industry environments while demonstrating competency against the Engineering Council of South Africa (ECSA) Graduate Attributes framework. Students are required to provide evidence of competency development across eleven Graduate Attributes (GA1–GA11)



### About OLUMS

Online University Management Systems (OLUMS) is an education technology company specialising in digital platforms for higher education and skills development. Founded in 2019, OLUMS designs systems that support academic operations, industry engagement, and regulatory compliance.

As an AWS Partner, OLUMS builds and operates its platforms on Amazon Web Services to meet the scalability, security, and reliability requirements of public sector and higher education institutions.



## The Challenge: Managing ECSA-Aligned Engineering Competency Assessment

The Electrical Engineering department faced increasing pressure to demonstrate that Work-Integrated Learning (WIL) assessments were consistently aligned to the eleven ECSA Graduate Attributes (GA1–GA11). Existing processes relied heavily on manual logbooks, fragmented assessment methods, and retrospective evidence collection, making it difficult to demonstrate structured competency progression across workplace environments.

A significant challenge was the absence of a standardised framework to map workplace activities, assessments, and evidence directly to ECSA Graduate Attributes. Academic staff had limited visibility into whether students were achieving the required competencies at the appropriate complexity level for either Engineering Technician or Engineering Technologist pathways. This created inconsistencies in assessment practices and increased the administrative burden associated with accreditation preparation.

The department required a scalable system capable of structuring and standardising Graduate Attribute assessment across engineering disciplines while improving traceability, auditability, and real-time oversight. Without a structured and defensible competency tracking environment, the qualification faced increasing accreditation risk and difficulty evidencing compliance with ECSA standards.

## The Solution: Structured ECSA Graduate Attribute Mapping and Competency Tracking

OLUMS implemented a purpose-built AWS-hosted Work-Integrated Learning (WIL) platform designed to structure and standardise engineering competency assessment in alignment with ECSA requirements. Central to the implementation was the development of a comprehensive Engineering Assessment Matrix framework that aligned qualification outcomes, workplace activities, and assessment evidence directly to the eleven ECSA Graduate Attributes (GA1–GA11).

The platform digitised engineering logbooks and introduced structured workflows for workplace mentor verification, academic oversight, and competency progression tracking. Students captured workplace activities within a controlled digital environment, while mentors and academic staff verified assessments against predefined Graduate Attribute requirements and competency expectations.

The solution also enabled differentiated competency tracking between Engineering Technician and Engineering Technologist pathways, ensuring that assessment expectations aligned appropriately with well-defined and broadly-defined engineering problem environments. Academic departments gained real-time visibility into student progression, evidence completeness, and Graduate Attribute achievement across distributed workplace environments.

## Results: Improved Accreditation Readiness and Structured Competency Oversight

The implementation introduced a structured and auditable approach to managing ECSA-aligned Work-Integrated Learning assessments across the Electrical Engineering qualification. Academic departments gained centralised visibility into Graduate Attribute progression, workplace assessments, and competency evidence, significantly improving consistency in how engineering outcomes were monitored and validated.

The Engineering Assessment Matrix framework strengthened the institution's ability to demonstrate alignment between workplace learning activities and the eleven ECSA Graduate Attributes. This improved traceability between assessments, evidence, and competency outcomes while reducing reliance on fragmented manual processes and retrospective reconciliation during accreditation preparation.

By digitising and standardising Graduate Attribute assessment workflows, OLUMS helped the department strengthen accreditation readiness and establish a scalable framework for engineering competency management across disciplines. The structured approach restored confidence in the qualification's ability to demonstrate compliance with ECSA accreditation standards and reduced the risk associated with inconsistent competency assessment practices.

## Structured Engineering Competency Management Aligned to ECSA Requirements Through a Unified Digital Platform

To support ECSA-aligned Engineering qualifications, OLUMS provides a unified platform that structures the full Work-Integrated Learning (WIL) competency journey across Engineering Technician and Engineering Technologist pathways.

The platform integrates Graduate Attribute mapping, workplace assessment, mentor verification, and academic oversight within a single system, ensuring that competency progression is consistently applied, measurable, and auditable. Workplace activities and assessments are aligned directly to the eleven ECSA Graduate Attributes (GA1–GA11), enabling institutions to track not only completion, but verified competency development against ECSA standards.

Built on AWS, the solution provides secure, role-based access for students, workplace mentors, and academic staff, while centralised workflows eliminate fragmented tracking and manual reconciliation processes. Real-time visibility into Graduate Attribute progression improves accreditation readiness, strengthens assessment defensibility, and enables institutions to manage engineering competency assessment consistently across distributed workplace environments.

### CASE STUDY

## Strengthening Engineering Competency and Accreditation Through Structured WIL and ECSA Alignment

An AWS-powered platform that structures Engineering Work-Integrated Learning, aligns assessment to the 11 ECSA Graduate Attributes (GA1–GA11), and improves accreditation readiness.

| ECSA Graduate Attributes (GA1–GA11)  | Level |
|--------------------------------------|-------|
| GA1: Problem Solving                 | 4     |
| GA2: Application of Knowledge        | 3     |
| GA3: Design/Development of Solutions | 3     |
| GA4: Investigation                   | 4     |
| GA5: Engineering Tool Usage          | 3     |
| GA6: The Engineer and Society        | 3     |
| GA7: Environment and Sustainability  | 3     |
| GA8: Ethics                          | 3     |
| GA9: Individual and Teamwork         | 3     |
| GA10: Communication                  | 4     |
| GA11: Project Management and Finance | 3     |

Legend: ● Achieved ● In Progress ● Not Started

#### THE CHALLENGE

Inconsistent assessment, limited visibility into competency progression, and manual logbooks created accreditation risk and audit challenges.

#### THE SOLUTION

A structured Engineering Assessment Matrix, digitised logbooks, and real-time oversight aligned to the 11 ECSA Graduate Attributes (GA1–GA11).

#### THE RESULT

Stronger accreditation readiness, consistent competency tracking, and confidence in demonstrating ECSA compliance across Engineering programmes.

#### SAVED FROM DEREGISTRATION

The structured competency management framework restored accreditation confidence and saved the qualification from deregistration.

aws  
AWS-Powered

Secure & Compliant

Role-Based Access

Real-Time Visibility

Audit-Ready

## Reliable Engineering Competency Tracking and Verification Across Distributed Workplace Environments

Engineering Work-Integrated Learning placements often occur across diverse industrial and workplace environments, making consistent assessment, verification, and competency tracking difficult to manage through manual processes.

OLUMS enables structured digital capture of workplace activities, assessments, and supporting evidence within ECSA-aligned engineering logbooks, while workplace mentors complete guided verification workflows that create clear and auditable records of competency progression.

Academic departments retain real-time visibility into Graduate Attribute achievement, assessment readiness, and workplace verification across distributed placement sites, while the AWS-based platform provides secure, scalable, and reliable engineering competency management at scale.



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## Supporting ECSA Compliance Through Structured Graduate Attribute Mapping

For professionally regulated Engineering qualifications, compliance extends beyond placement completion to the structured demonstration of competency development against the eleven ECSA Graduate Attributes (GA1–GA11). Engineering departments must be able to demonstrate not only that students participated in workplace learning, but that workplace activities, assessments, and evidence align consistently with ECSA competency standards and engineering problem complexity levels.

Previously, this process relied heavily on manual logbooks, fragmented assessment practices, and retrospective evidence reconciliation, making it difficult to consistently verify Graduate Attribute achievement across workplace environments. Academic staff had limited visibility into whether students were meeting the required competency standards for either Engineering Technician or Engineering Technologist pathways.

OLUMS addressed this through a structured Engineering Assessment Matrix framework that aligned qualification outcomes, workplace activities, assessments, and evidence directly to ECSA Graduate Attributes. Students captured workplace activities within structured digital engineering logbooks, while workplace mentors and academic staff completed guided verification workflows that created clear and auditable records of competency progression.

## Supporting Consistent Engineering Competency Assessment Across Multiple Disciplines and Workplace Sites

Engineering students are placed across diverse industrial environments, including manufacturing plants, utilities, consulting firms, workshops, and infrastructure projects, where workplace exposure and assessment practices can vary significantly between sites. This created challenges in ensuring that all students were being assessed consistently against ECSA Graduate Attributes, regardless of placement location or engineering discipline.

The department previously relied on manual engineering logbooks and workplace feedback that differed in quality, structure, and level of detail across employers. Academic staff had limited visibility into whether students were being exposed to the appropriate engineering activities required to develop competencies in areas such as problem solving, engineering design, investigations, technical communication, and engineering management.

OLUMS introduced a structured Engineering Assessment Matrix framework that standardised how workplace activities, evidence, and assessments were mapped to the eleven ECSA Graduate Attributes across Engineering Technician and Technologist pathways.

*“The system provided improved visibility into competency tracking, assessment consistency, and accreditation readiness. The OLUMS team assisted the department to implement the ECSA-mandated changes required for final accreditation approval.”*

**Electrical Engineering  
WIL Coordinator**