BEM content (for all partners)	Title/name of the credential	Structured Query Language (SQL) Optimization and Database Performance		
	Function of the micro-credentials / purpose	The aim of this microcredential is to improve the learners' abilities in SQL optimization and advanced database management. It focuses on improving the efficiency and performance of SQL queries and databases in real-world applications. Learners will develop expertise in query optimization, indexing, stored procedures, and managing large-scale databases.		
	Possible target groups	Individuals of all backgrounds and ages interested in advancing their career as data scientists		
	Branch/sector of application	Information Technologies Data Management		
	Fields of application / work environment	Database Performance Optimization IT Infrastructure Management System Architecture		
	Typical work/professional tasks	Analyse and improve query performance; Identify and apply strategies to enhance the performance of large and complex databases; Simplify and standardise complex database operations; Database Maintenance; Solve data-performance issues through advanced SQL optimization techniques.		
	Learning outcomes (personal and job related)	Knowledge	Skills	Competences
		Knowledge:		

<table>
<tr><td rowspan="3"></td><td rowspan="3"></td><td colspan="2">In-depth understanding of SQL optimization techniques — including indexing, query rewriting, and analysing execution plans to improve performance.
Knowledge of the architecture and implementation of stored procedures and views for optimising repetitive tasks.
Proficiency in advanced database management functions, such as partitioning, window functions, and performance tuning, to enhance efficiency and scalability in large and complex databases.

Skills:
Ability to:
- Optimise SQL queries for improved performance;
- Use advanced SQL functions to ensure efficient querying in large and complex databases;
- Analyse and interpret SQL execution plans to identify and resolve performance bottlenecks;
- Develop and manage stored procedures and views to streamline and automate complex database operations;
- Enhance database performance by implementing indexing strategies, partitioning, and other optimization methods for handling large and complex databases.

Learning outcomes should be formulated in commonly accepted way, see the link:https://eurspace.eu/ecvet/pedagogicalkit/framework-for-defining-learning-outcomes-knowledge-skills-competence/
Can be used the formulation format of National Qualification Framework descriptors, adjusting and applying that format for relevant job.</td></tr>
<tr><td rowspan="2">Validation</td><td>criteria</td><td>procedures</td></tr>
<tr><td colspan="2">Validation will be conducted through a practical assignment.</td></tr>
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		Procedure: Students will need to complete a final project where they analyse a complex, multi-table database, identify performance issues, and apply optimization techniques, including indexing and query rewriting. **Criteria:** Successful delivery of a project that demonstrates measurable performance improvements in query execution, supported by the use of optimization strategies.
	Recognised/accepted (documented by MoU)	Name of companies Target Group
	Provider(s)	Private EduTech companies, Vocational-Educational schools
Additional information (if needed)	Entry level / prerequisites	Completed microcredential on SQL Fundamentals and Advanced Querying
	Possible duration (recommendation)	20 hours (10 theoretical + 10 practical)
Specific content (national) (if needed)	Position in the chain of educational programmes	2nd out of 2 micro credentials on SQL
	Reference to NQF	
	Credits	