

<b>Module Title:</b>	Data Engineering
<b>Language of Instruction:</b>	English
<b>Credits:</b>	5
<b>NFQ Level:</b>	8
<b>Module Delivered In</b>	<a href="#">3 programme(s)</a>
<b>Teaching &amp; Learning Strategies:</b>	This module is 100% delivered interactively within a laboratory setting (on online, as needed).
<b>Module Aim:</b>	To provide an overview of modern data engineering practices, tools, and methods.
<b>Learning Outcomes</b>	
<i>On successful completion of this module the learner should be able to:</i>	
LO1	Clean and wrangle data from multiple sources into a usable state.
LO2	Organize the collection, processing, and storage of data from different data sources.
LO3	Design and build ETL and ELT processes and pipelines.
<b>Pre-requisite learning</b>	
<b>Module Recommendations</b>	
<i>This is prior learning (or a practical skill) that is recommended before enrolment in this module.</i>	
No recommendations listed	
<b>Incompatible Modules</b>	
<i>These are modules which have learning outcomes that are too similar to the learning outcomes of this module.</i>	
No incompatible modules listed	
<b>Co-requisite Modules</b>	
No Co-requisite modules listed	
<b>Requirements</b>	
<i>This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.</i>	
No requirements listed	

### Module Content & Assessment

Indicative Content
<b>Data Formats</b> Understanding internet data-types: MIME, quoted-printable, Base64 (and others). Data Sources: TXT, CSV, JSON, Web Data, APIs, ERP, CRM, Databases. Structured data, Semi-structured data, and unstructured data.
<b>Data Storage</b> SQL Databases, Document Databases, Graph Databases, Data Warehouses, Data Lakes, Dataframes.
<b>ETL/ELT</b> Extract, Transform, and Load and Extract, Load, and Transform: data cleaning, munging, parsing, converting, mining, and saving.
<b>Data Platforms</b> Big Data, Map Reduce, Cloud-scale data, distributed data processing, Data pipelines, Parallel Computation Platforms, Scaling Issues/Concerns.

Assessment Breakdown	%
Project	100.00%

No Continuous Assessment

Project				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Project	TBD	1	35.00	n/a
Project	TBD	2	20.00	n/a
Project	TBD	3	45.00	n/a

No Practical

No End of Module Formal Examination

SETU Carlow Campus reserves the right to alter the nature and timings of assessment

**Module Workload**

<b>Workload: Full Time</b>		
<i>Workload Type</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Laboratory	12 Weeks per Stage	2.00
Estimated Learner Hours	15 Weeks per Stage	6.73
Total Hours		125.00

## Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_KCCGD_B	<a href="#">Bachelor of Science (Honours) in Computer Games Development</a>	8	Group Elective 1
CW_KCCYB_B	<a href="#">Bachelor of Science (Honours) in Cyber Crime and IT Security</a>	8	Elective
CW_KCSOF_B	<a href="#">Bachelor of Science (Honours) in Software Development</a>	8	Group Elective 1

### Discussion Note:

First draft of one of the elective modules for final year undergrad offerings.