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| <b>Module Title:</b>   | Programming Language Design   |
| <b>Language of Instruction:</b>  | English   |
| <b>Credits:</b>  | 5   |
| <b>NFQ Level:</b>  | 8   |
| <b>Module Delivered In</b>   | <a href="#">2 programme(s)</a>  |
| <b>Teaching &amp; Learning Strategies:</b>   | Learners will be expected to actively participate in class on the materials covered and through assigned projects throughout the year |
| <b>Module Aim:</b>   | To provide learners with a theoretical knowledge of, and practical skills of designing programming languages                          |
| <b>Learning Outcomes</b>   |   |
| <i>On successful completion of this module the learner should be able to:</i>  |   |
| LO1  | Understand the principles behind good programming language design   |
| LO2  | Design appropriate Domain Specific Languages  |
| LO3  | Understand the fundamentals of program language theory  |
| <b>Pre-requisite learning</b>  |   |
| <b>Module Recommendations</b><br><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><br><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><br><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   |
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| <b>Paradigms</b><br>Functional; Declarative; Constraint Logic; Imperative; Object Oriented; Concurrent; Hybrid |
| <b>Typing</b><br>Static and Dynamic; Strong and Weak; Type Inference   |
| <b>Variables</b><br>Scope; Parameter Passing; Mutability; Data Types; Memory Management                        |
| <b>Execution</b><br>Compilers; Interpreters; Virtual Machines; Portability                                     |
| <b>Usability</b><br>Syntax; Readability; Structure; Grammar  |
| <b>Implementation Issues</b><br>Grammar; Tokens; Parsing; Boot-strapping                                       |

| Assessment Breakdown             | %      |
|----------------------------------|--------|
| Project                          | 50.00% |
| End of Module Formal Examination | 50.00% |

No Continuous Assessment

| Project         |  |                   |            |                 |
|-----------------|--|-------------------|------------|-----------------|
| Assessment Type | Assessment Description   | Outcome addressed | % of total | Assessment Date |
| Project         | Produce an in-depth critique of an existing programming language         | 1                 | 25.00      | n/a             |
| Project         | Design a Domain Specific Language suitable for a specific problem domain | 2                 | 25.00      | n/a             |

No Practical

| End of Module Formal Examination |                        |                   |            |                 |
|----------------------------------|------------------------|-------------------|------------|-----------------|
| Assessment Type                  | Assessment Description | Outcome addressed | % of total | Assessment Date |
| Formal Exam                      | n/a                    | 3                 | 50.00      | End-of-Semester |

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> |
| Lecture                    | 12 Weeks per Stage | 2.00                                   |
| Laboratory                 | 12 Weeks per Stage | 1.00                                   |
| Independent Learning       | 15 Weeks per Stage | 5.93                                   |
| 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_KCSOF_B     | <a href="#">Bachelor of Science (Honours) in Software Development</a>       | 8        | Group Elective 1 |