| Module Title: | Secure Application Development |
|---|---|

| Credits: | 5 |
|---|---|

| NFQ Level: | 8 |
|---|---|

| Module Delivered In | 2 programme(s) |
|---|---|

| Teaching & Learning Strategies: | As well as traditional lectures learners will undertake various laboratory exercises. Learners will be expected to actively participate in class on the materials covered and work throughout each scheduled lab session to accomplish assigned tasks. |
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| Module Aim: | To provide learners with a theoretical knowledge and practical skills of developing secure software applications, with particular emphases on web technologies. |
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| Learning Outcomes |
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| *On successful completion of this module the learner should be able to:* |

| LO1 | Evaluate and discuss the most prevalent software application security issues. |
|---|---|
| LO2 | Perform security testing to identify and validate the existence of software vulnerabilities. |
| LO3 | Formulate and deploy strategies to fix or mitigate against identified vulnerabilities. |

| Pre-requisite learning |
|---|
| ***Module Recommendations*** <br> *This is prior learning (or a practical skill) that is recommended before enrolment in this module.* |
| No recommendations listed |
| ***Incompatible Modules*** <br> *These are modules which have learning outcomes that are too similar to the learning outcomes of this module.* |
| No incompatible modules listed |
| ***Co-requisite Modules*** |
| No Co-requisite modules listed |
| ***Requirements*** <br> *This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.* |
| No requirements listed |

## Module Content & Assessment

| Indicative Content |
| --- |
| **Secure Software Development**<br>Secure software life cycle, secure application design, secure mobile application development, cryptographic Design & implementation. |
| **Data Validation & Access Control**<br>Input validation and sanitisation, output encoding, authentication and password management, session management, access control. |
| **Error Management and Information Disclosure**<br>Error handling and logging, environment configuration, minimising Information Disclosure |
| **Resource Security**<br>Communication security, system configuration, database security, file access management, memory management. |
| **System Penetration Testing & Code Analysis**<br>Vulnerabilities code analysis and mitigations as outlined by leading industry security bodies such as OWASP, ISC2 and SANS. |

| Assessment Breakdown | % |
| --- | --- |
| Continuous Assessment | 10.00% |
| Project | 40.00% |
| End of Module Formal Examination | 50.00% |

| Continuous Assessment | | | | |
| --- | --- | --- | --- | --- |
| *Assessment Type* | *Assessment Description* | *Outcome addressed* | *% of total* | *Assessment Date* |
| Examination | Examination on content up to week 7 | 1,3 | 10.00 | Week 7 |

| Project | | | | |
| --- | --- | --- | --- | --- |
| *Assessment Type* | *Assessment Description* | *Outcome addressed* | *% of total* | *Assessment Date* |
| Project | Analyse the security flaws in a web application and perform code analysis and edits to mitigate identified vulnerabilities. | 2,3 | 40.00 | Week 10 |

| No Practical |
| --- |

| End of Module Formal Examination | | | | |
| --- | --- | --- | --- | --- |
| *Assessment Type* | *Assessment Description* | *Outcome addressed* | *% of total* | *Assessment Date* |
| Formal Exam | The terminal exam will be a 3 hour written test | 1,2,3 | 50.00 | End-of-Semester |

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

## Module Workload

| Workload: Full Time | | |
|---|---|---|
| *Workload Type* | *Frequency* | *Average Weekly Learner Workload* |
| Lecture | 12 Weeks per Stage | 2.00 |
| Laboratory | 12 Weeks per Stage | 2.00 |
| Independent Learning Time | 15 Weeks per Stage | 5.13 |
| | Total Hours | 125.00 |

## Module Delivered In

| Programme Code | Programme | Semester | Delivery |
|---|---|---|---|
| CW_KCCYB_B | Bachelor of Science (Honours) in Cyber Crime and IT Security | 8 | Mandatory |
| CW_KCSOF_B | Bachelor of Science (Honours) in Software Development | 8 | Mandatory |

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