

Module Title:	Web III: secure web applications
Module Code:	05I
Level:	5
Credits:	15
Pre-Requisites:	

Module Description:

Students learn how to design and implement a web application that uses a database for storage. They enhance their knowledge of client- and server-side scripting languages as they make use of the latest features of browsers to build highly interactive websites. The latest third-party client scripting libraries are explored and students have opportunities to assess when their use would be appropriate in a commercial setting. An awareness of the risks of malicious use is key when developing database applications for the web, and this is covered from a range of angles.

Indicative Content:

- Interpretation of a specification and design of moderate size and complexity
 - Implement a website of moderate complexity by implementing features of client and server side programming
 - Design and perform testing
 - Design and implement maintainable code
 - Use of SQL for data creation, maintenance, deletion and queries in a relational database
 - Protect against malicious behaviour such as SQL injection and cross-site scripting
 - Stored procedures, prepared statements
 - System-level security such as securing database credentials, organising directories and selecting non-default usernames
 - Logging in, session IDs, storing session ID in database, timeouts
 - Asynchronous updates using AJAX
 - JSON, other data formats, other kinds of database
 - Third party libraries e.g. jQuery
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Learning and Teaching Methods:

The module will be delivered through a combination of lectures and workshops (3 hours per week).

Module Specifications: Schools of Business & Management & Information Technology

Specific Learning Resources:

Web server and database server accessible in programming lab.

Integrated Development Environment supporting client- and server-side scripting languages.

Text editor.

Bibliography

Highly Recommended Reading

McFarland, D. (2011). *JavaScript and jQuery: The Missing Manual (2nd Edition)*. Sebastopol, CA, USA: Pogue Press.

McGrath, M. (2012) *PHP and MySQL In Easy Steps*. Leamington Spa, UK: Easy Steps Limited.

Recommended Reading

Pollock, J. (2014) *jQuery: A Beginner's Guide*. New York, USA: McGraw-Hill Osborne Media.

Snyder, C. (2011) *Pro PHP Security*. New York, USA: Apress

Module Learning Outcomes

Subject Specific Learning Outcomes

On successful completion of this module you will be able to:

LO 1	Analyse the requirements for, and design database applications for, a web environment
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LO 2	Choose and apply server- and client-side programming concepts, languages and libraries in the development of the database application, and critically evaluate the choices made
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LO 3	Implement and explain a range of strategies for protecting against malicious use of the web application
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Assessment Title or element	Weighting (%)
Assignment 1: design and partial implementation of web application; report containing design diagrams, code listings and test plans, with evaluation (800 words) [mid semester]	50%
Assignment 2: web application implementation completed and tested; report containing code listings and test plans, with evaluation (800 words) [end semester]	50%