UNIVERSITY OF LONDON

BSc Computer Science

Module Specification

Key Information			
Module title	Advanced Web Development		
Level	6	Credit value	15
Member Institution	Goldsmiths	Notional study hours and duration of course	150
Module lead author/ Subject matter expert	Matthew Yee-King		
Module co-author			

Rationale for the module

Web application development is a critical application area for computer science. Many of the largest technology companies maintain large scale web applications, providing services such as social media, search, advertising and video and audio streaming. While studying this Computer Science programme, you will have developed client-side web development skills, database and networking skills, programming skills and computer security know-how. The advanced web development module provides an in-depth exploration of server and client-side web technologies and development which builds on this foundation.

Aims of the module

Through this module, you will learn how to build dynamic, data-driven websites using databases, front-end frameworks and server-side programming. This module provides the skill set required to do full stack web development work. By studying this module, you will develop a web developer skill set that enables you to understand how to build and deploy complete, data-driven websites. You will consider several different technologies for client side-web development such as HTML, CSS, Javascript and templates. You will explore methods for developing server-side web applications, by building web-accessible wrappers around databases. You will consider issues of scalability, and learn about web application configuration and deployment.

Topics covered in this module:

The topics listed here are an approximation of what will be covered. The topics presented may be slightly revised to ensure currency and relevance. Students will be advised of any changes in advance of their study.

1. The web stack: clients, web servers and databases
2. Advanced features of HTML, CSS and Templates
3. Deploy a website
4. Basic databases and data schemas for a website
5. Build a CRUD/ RESTFul API
6. Build a CRUD/ RESTFul API pt 2
7. Build a websocket server
8. User authentication and security
9. Working with external APIs
10. Scalability

Approximately 10-12 hours of study will be required per topic. The remaining study time is intended for coursework.

Learning outcomes for the module

Students who successfully complete this module will be able to:

1. Create a data-driven web page using HTML, CSS and templates
2. Create server-side web applications with HTTP, RESTFul and web socket interfaces
3. Set up a web server and database server and use it to deploy a web application with a database backend
4. Design basic database schemas to model specific data
5. Describe and evaluate user authentication and security features and implement them in software
6. Explain issues relating to scalability in web servers and use these principles to assess particular web server configurations

Assessment strategy, assessment methods

Summative and Formative Assessments
The module will contain a range of summative and formative assessments. Summative assessments are assessments which contribute directly towards your final grade. Formative assessments do not count directly towards your final grade. Instead, they provide you with opportunities for low stakes practice, and will often provide some sort of feedback about your progress. For example, a practice quiz might provide you with feedback about why a particular answer was wrong.

Assessment Activities
The table below lists the assessment activity types you might encounter taking the module. It also states if that type of assessment can be automatically graded. For example, multiple choice quizzes can be automatically graded, and so can some programming assignments. It also states if that type of assessment will be found in the summative courseworks (CW1, CW2). More details about the summative assessments are provided below.

Assessment activity type	**Can it be automatically graded with feedback in some cases?**	**CW1**	**CW2**
Quiz	X	X	X

Writing task		X	X
Programming task	X	X	X
Video task		X	X
Peer review task		X	X

Pass Mark

In order to pass this module, you must achieve at least 35% in each element of summative assessment and an overall weighted average of 40%, subject to the application of rules for compensation. Please refer to the programme regulations for more information.

Summative Assessment Elements

This is a module that is best assessed largely through continuous assessment by way of programming exercises worked on throughout the session.

Summative Assessment Component	Components	Percentage of final credit	Deadline
Coursework 1	Four programming exercise submissions	50%	Mid session
Coursework 2	Four programming exercise submissions	50%	End of session

Each of the two courseworks will take up to 25 hours of study time to complete and comprise a variety of practical exercises and quizzes.

Learning resources

The module will draw on a number of different, largely web-based, public resources as well as the resources produced as bespoke material for this module. The standard text book(s) for the module will be:

Flask Web Development: Developing Web Applications with Python, Miguel Grinberg, ISBN 10: 1449372627, O'Reilly Media, 2014

Webber et al. R*EST in Practice: Hypermedia and Systems Architecture*. O'Reilly 2016

Online Tutorial:
https://zellwk.com/blog/crud-express-mongodb/