LEEDS BECKETT UNIVERSITY

Module Handbook

2025/26

Web Application Technologies

School	Built Environment, Engineering, and Computing
Level	5
Semester	1
Credits	20
CRN	14104

Module Leader	Patrick Ingham / Tony Jenkins
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Communication Protocol: module staff will reply to student questions within a reasonable time, but this will normally be within office hours only. Students are advised to check this handbook and also to see if there are any online/noticeboard announcements or FAQ answers that deal with their enquiry before contacting staff

Introduction from the Module Leader

Welcome to *Web Application Technologies*, or as we will usually call it "WAT".

This module aims to provide you with an introduction to some of the technologies that are used in developing modern web applications. This is a very big topic! We have designed the module to give a broad coverage, including both front-end and back-end technologies. The assessment will address both aspects.

The module will cover front-end with HTML and CSS. In line with the current trends in industry we will use a CSS toolkit to provide some "ready-made" components, and to ease the process of developing modern-looking, responsive, sites. There are many toolkits we could have chosen; we have selected based on current use and ease of learning in, what is after all, a very short course.

For back-end we will build on your knowledge of Python to use the Django web development framework. Again, this emphasis fits with current industry practice. We will also look briefly at the "old days" of web development so that we can see how, and why, things have changed.

Underpinning all this we will try to follow good practice in management of source code, and in managing multiple development projects. We will again use GitHub and hopefully you will be able to continue building up a portfolio of work there. A significant part of the assessment will be based on how you use GitHub to manage your code.

With Python we will make use of *virtual environments*, which will allow us to introduce some of the issues surrounding the management of dependencies in complex projects.

At the end of the module, we hope you will understand the tools and processes that are involved in creating a modern web app.

This is the second year the module has run in this form. We have made some changes based on our experience last year, and also on feedback received. We are always willing to listen to feedback; raising issues as they arise mean that we may be able to address them or provide answers immediately.

The rest of this handbook contains useful information on how the module will run. Have a read and bring any questions to your first practical session.

Cheers!

Patrick and Tony

Module Aims

The ability for Internet-based services to interact with data stores and exchange data is essential for developing many web-based application systems.

This module aims to equip students with the basic grounding to design and build such systems.

Module Learning Outcomes

By studying this module, students are expected to:

1	LO1: Apply appropriate principles, knowledge, and techniques to the design of a web-based system.
2	LO2: Identify and apply appropriate algorithms and data structures within a web scripting language.
3	LO3: Develop secure, data-oriented, web application systems.

The assessments provide the opportunity for students to demonstrate that they have attained these outcomes.

Module Learning Activities

The topics in this module form two broad groups. First, there are the concepts and knowledge that underpin modern web development; these can be learned and appreciated by studying articles and even books. Second, the technologies and their use, which must be learned by doing. There is therefore a range of learning activities in the module.

The module "Book" covers all the relevant material, and includes practical exercises. The link is posted to the main module page on MyBeckett.

Note: This module book is constantly "under development", so at the start of the module some of the later chapters of the book may be incomplete. Other sections may be updated if relevant platforms have changed. Be sure to check back or reload to make sure you have the current version.

In addition, there will be:

Tutorial / Demo Videos [Roughly 1 Hour per Week]

These will not be lectures, but will be short demos and walkthroughs of key ideas. They will build on the content from the module book, and will not replicate or replace that content. (Students should be sure to use both.) There may be several released in any week, with the length of all combined being about one hour. They will be released at the start of the week, and should be viewed before the practical sessions at the end of the week.

Practicals [2 Hours per Week]

The weekly practicals will provide an opportunity to explore the weekly topics as a group and independently. They also provide a time to ask questions, or for more general support. Most practicals will start with some demonstration, but all will assume that the lecture videos, and reading, are familiar.

Self-Study [Minimum 4 Hours per Week]

As with all practical modules, students should be prepared to allocate significant time for development work.

Indicative Module Content

The aim in the module is to introduce some of the tools and techniques used in the development of a modern web application. Where more than one tool exists, exemplars based on current use in industry have been chosen. Coverage is broad, so that by the end of the module students will have had experience of both front-end and back-end technologies.

The module will cover HTML and CSS for static front-end development. It will emphasise the use of a utility CSS framework rather than "straight" CSS. This is partly to allow more complete results to be achieved in the short time available, and also reflects trends in industry.

For back-end, an MVC framework will be used. Again, this reflects the move away from simply embedding scripts in HTML towards a toolkit-based approach. It will also allow more complete applications to be developed, without the need to reinvent components that are now usually provided.

The specific frameworks used in the current version of the module will be the Bulma CSS Framework, and the Django Web Framework. All students have previous experience of Python, which drives the framework choice. Bulma is a relatively small framework that can be used standalone, without the need to delve into complex issues of file management.

Software engineering principles, including source code management, will also be developed further. This will include the management of dependencies. Use of Git and GitHub to a professional standard will be expected.

No specific data store technology will be introduced, as this is usually irrelevant with a modern framework. SQLite will be used with Django in demonstrations, to reflect its widespread use in development.

All the technologies are examples of current industry use. It is expected that students would be able to transfer their knowledge to other, similar, technologies.

Graduate Attributes Developed and Assessed

Graduate attributes provide a language for students to articulate their skills and strengths, and a basis to self-assess their personal development. The graduate attributes in this module are developed and assessed:

Attribute	***How Developed***	***How Assessed***
Enterprise	Consideration of security in the development of a website.	Justification of decisions.
Digital Literacy	Application of a range of digital tools in the development of a website.	Quality of website developed, and organisation of underpinning code.
Global Outlook	Students are developing skills that are globally recognised and which meet a significant skills shortage in industry.	Awareness of the bigger picture in systems development.

More information on graduate attributes is available here: https://www.leedsbeckett.ac.uk/student-information/academic-skills-and-advice/graduate-attributes/

Relevant information is also available within your Course Handbook, which is available via MyBeckett and

https://www.leedsbeckett.ac.uk/student-information/course-information/course-handbooks/

Communication

The main formal means of communication will be via MyBeckett and your University student email account. You should ensure that you check your University email account **at least** every other day. Staff will not respond to emails sent from any other email account. Not having read an email will not be an excuse for anything.

A weekly "bulletin" email will be sent on Mondays with pointers for the week's work and any important announcements. This will include the announcement of the availability of the week's video content.

If asking about a program error be sure that the offending code is in your GitHub repo, and supply an image of the error message. Remember that debugging program code that uses a framework is complex and may have to wait until a practical session.

The Module Team aim to reply to emails within **48 working hours.**

We ask that you send ALL queries in a SINGLE EMAIL addressed to BOTH Module Leaders.

If you feel you are falling behind it is important to contact the Module Team as soon as possible. In this module in particular it is very difficult to catch up if you do fall behind.

You must notify your Course Administrator if you are absent for more than one day (for example for an interview, emergency unforeseen circumstances, or for compassionate leave). If you are going to apply for mitigation you will need to provide written evidence of the reason for your absence (see **Extenuating Circumstances and Mitigation** for further information).

Weekly Schedule

Semester 1

The general plan is shown below. Like all good plans it is subject to change. This plan is indicative, and does not necessarily correspond to weekly events. It is in the nature of this module that some students will progress faster than others; this is fine as long as the end point is the same for all.

Week Commencing Date	**Theme**	**Overview**	**Activities**	
22nd September	*Introduction and Refresher*	Web protocols; Python packages; Managing dependencies.	Using Postman for HTTP; Creating Python environments; Managing source code.	
29th September	*Web Basics*	APIs; Programming with an API; HTTP verbs; JSON.	Using APIs in Python; Sending queries; Receiving results; Packing and unpacking JSON.	
6th October	*HTML and CSS*	HTML concepts; Page structure; The DOM; HTML tags; CSS concepts; Adding CSS to a web page; Selectors; Page layouts	Creating basic HTML pages; Building a static site; Using tags; Encoding document structure; Adding static CSS to HTML pages; Ensuring consistency.	
13th October	*CSS Toolkits*	Responsive design; Adding a toolkit; Motivation; Benefits; Utility toolkits; Examples.	Migrating CSS to Bulma toolkit; Using CSS for page layout; Consistency; Customising Bulma.	
20th October	*Phase Test Assessment (30%)*			
27th October	*Reading Week: Web design; Good UX and UI; Accessibility guidelines and issues.*			
3rd November	*Web Frameworks and MVC*	MVC concepts; History; Overview of web frameworks.	Creating a Django project; Django admin; Managing a Django project code.	
10th November	*Django Basics*	Django concepts; Project structure; MVT.	Adding endpoints to a Django project; displaying results; Data stores.	
17th November	*Django Models*	Modifying Django admin; Model features; Relationships; ORM.	Defining a complex model; Managing admin; Seeding a database; Changing data store.	
24th November	*A Django Site*	Templates; Inheritance within Templates; Errors.	Displaying data via endpoints; Using Bulma in templates; Adding 404 pages.	
1st December	***Revision and Consolidation***			
8th December				

Contact Hours

Practicals: 12 x 2 Hours = 24 Hours

Recorded Video: Minimum 12 x 1 Hour = 12 Hours

Key Resources to Support Learning

There are many resources available to support learning these topics. Examples include, but are not limited to:

- Real Python (https://realpython.com/) for tutorials on advanced topics in Python.
- The official Git documentation at https://git-scm.com/doc .
- The Mozilla Web Docs (for example https://developer.mozilla.org/en-US/docs/Web/HTML) for HTML and CSS.
- The docs for the Bulma CSS framework at https://bulma.io/ .
- The official Django documentation (https://docs.djangoproject.com/en/5.1/), and especially the associated tutorials.

As always, there are many tutorials available as web pages and videos on YouTube. You will be directed to key resources and/or recommendations, but you should not feel limited by this. Part of the skillset of a web developer is the ability to seek out this sort of material, and to learn independently.

When looking for additional resources, students should always be sure to check that they relate to recent versions of the packages used. HTML and CSS have changed little recently, for example, but new releases of Django are quite common.

Disability Advice and Support

You may also want to include support available from Learning Support Officers, if appropriate.

All disabled students requiring additional support or alternative arrangements must declare and provide evidence of their disability to the Disability Advice Team as early as possible: https://www.leedsbeckett.ac.uk/student-information/disability-advice/. [Delete this paragraph for modules which are delivered via franchise arrangements as students will not have access to our disability services. Instead, this section should reflect the services available at the recognised partner institution].

Assessment

Assessment Summary

An outline of the assessment is below.

Details of the assessment, including specific dates, are maintained in the “Assessment” folder on MyBeckett. They are not duplicated here to remove the risk of confusion caused by such duplication.

Assessment 1: Phase Test

Assessment Method:	Practical Test	**Re-assessment Method:**	Practical Test
Length	Two Hours	Length	Two Hours
Assessment Date and Time:	Week 5	Re-assessment Date and Time:	March 2026
Feedback Method:	Posted to MyBeckett	Feedback Method:	Posted to MyBeckett
Feedback Date:	Week 9	Feedback Date:	Four working weeks.
Learning Outcomes Assessed:	All		All

Assessment 2: Practical Work

Assessment Method:		**Re-assessment Method:**	
Submission:	Submission of GitHub repo, and demo.	Submission:	Submission of GitHub repo, and demo.
Assessment Date and Time:	End of Week 11	Re-assessment Date and Time:	March 2026
Feedback Method:	Posted to MyBeckett	Feedback Method:	Posted to MyBeckett
Feedback Date:	Four working weeks.	Feedback Date:	Four working weeks.
Learning Outcomes Assessed:	All		All

Assessment Details

Coursework

Full details of how to manage work and submit are maintained on MyBeckett.

All code should be maintained in a GitHub repo, created using the link provided. It is the students' responsibility to ensure that the work in the repo is that which they intend to be marked.

Student Instructions for Submission of Coursework

This module requires you to submit your work online.

You MUST submit through MyBeckett using the link set up by the tutor. Receipt of your work will be recorded. The time of submission will be taken from the submission to MyBeckett, and will be taken to indicate that the work is ready to be marked. This will override any evidence from the times of commits on GitHub.

Please note: Tutors will follow up any suspected breach of academic honesty found after the submission date as per University policy. Late penalties will apply as per University Regulations.

Instructions to Students

Full details of assessments, including marking rubrics will be made available on MyBeckett. This will be in good time for the assessment, usually at least three weeks before the assessment or submission date.

Feedback on Your Assessments

Feedback forms a large part of your learning experience and is vital to your personal and professional development.

Whatever your academic level, building on your feedback is vital. Noting and acting on feedback is key to independent learning, continued progress and long-term success.

https://libguides.leedsbeckett.ac.uk/skills-for-learning/building-on-feedback

Summative feedback (that is, your marks) will be posted along with a copy of the marking rubric on MyBeckett. Formative feedback will be available in every practical session, with the last two weeks specifically allocated for this.

Understanding Your Assessment Responsibilities

Extenuating Circumstances and Mitigation

If you are experiencing problems which are adversely affecting your ability to study (called 'extenuating circumstances'), then you can apply for mitigation. You can find full details of how to apply for mitigation at: https://www.leedsbeckett.ac.uk/student-information/exams-assessments-and-awards/mitigation-and-extenuating-circumstances/.

The University operates a fit to sit/fit to submit approach to extenuating circumstances which means students who take their assessment are declaring themselves fit to do so. More information is available at the above link and here: https://www.leedsbeckett.ac.uk/student-information/exams-assessments-and-awards/examinations/

Late Submission

Without any form of extenuating circumstances, standard penalties apply for late submission of assessed work. Full details of the penalties for late submission of course work are available at https://www.leedsbeckett.ac.uk/our-university/public-information/academic-regulations/.

Academic Honesty

Academic honesty is a fundamental principle within the University and is strongly linked to good academic practice. All assessments must be submitted with due attention to issues of academic honesty, expression, and good academic practice, including clarity in grammar, semantics and syntax.

Any suspected breach of academic honesty will be investigated by the University and could have serious consequences on your studies. Breaches of academic honesty include (but are not limited to) plagiarism, self-plagiarism, collusion and contract cheating. Definitions and the potential consequences of an admitted or found breach of academic honesty are detailed in the Academic Regulations at: https://www.leedsbeckett.ac.uk/our-university/public-information/academic-regulations/.

There are a range of resources available to help you understand what is and what is not permitted and how to use other people's ideas in your assessed work. These include the LBU Academic Honesty tutorial and the Skills for Learning website which you can access here https://libguides.leedsbeckett.ac.uk/skills-for-learning/. An *Academic Honesty Factsheet for Students* is available to view at: https://www.leedsbeckett.ac.uk/student-information/academic-skills-and-advice/academic-honesty/.

Your Feedback on the Module

A mid-module review will be timetabled into your module by week 7. This is an opportunity to resolve modular issues promptly early on in the module. In addition, you will have the opportunity to provide feedback formally at the end of your module-. These comments will be reviewed by your course team and some may be considered via the course monitoring and enhancement process, in which your Course Representative is involved.