School of Science, Computing and Engineering Technologies

Unit Outline

COS80022

Web Application Development

Semester 2 2024

Please read this Unit Outline carefully. It includes:

PART A Unit summary
PART B Your Unit in more detail
PART C Further information

"Swinburne University of Technology recognises the historical and cultural significance of Australia's Indigenous history and the role it plays in contemporary education

Each day in Australia, we all walk on traditional Indigenous land

We therefore acknowledge the traditional custodians of the land that our Australian campuses currently occupy, the Wurundjeri people, and pay respect to Elders past and present, including those from other areas who now reside on Wurundjeri land"

PART A: Unit Summary

Unit Code(s)		COS80021
Unit Title		Web Application Development
Duration		One semester
Total Contact Hours		48 hours
Requisites:		
	Pre-requisites	COS60004 Creating Web Applications PLUS COS60006 Introduction to Programming or COS60010 Technology Inquiry Project OR Admission into the Master of Information Technology (professional Computing) course.
	Co-requisites	None
	Concurrent pre-requisites	None
	Anti-requisites	None
	Assumed knowledge	Familiarity with any procedural programming language
Credit Points		12.5
Campus/Location		Hawthorn
Mode of Delivery		Lecture, Tutorial
Assessment Summary		1. Tutorial Lab Exercises (20%) 2. Project 1 (35%) 3. Project 2 (45%)

Aims

This unit is designed to introduce a variety of technologies and techniques typically used in development of contemporary web-based systems, and to enable students to achieve a level of fluency in using these in a thoughtful and considered manner. The unit also addresses ethics and cyber security issues related to the development of web applications.

Unit Learning Outcomes

Students who successfully complete this Unit should be able to:

1. Describe, identify and address issues including ethics and cyber security related to the development of web applications.
2. Explain the principles for secure web applications using contemporary server side development technology.
3. Use database for data management service with cyber security consideration.
4. Apply techniques to develop asynchronous web applications.
5. Use technologies for dynamic web interface update.
6. Select and apply technologies for data exchanges between different computer platforms.
7. Critically reflect ethical and cyber security practices in developing Web services and APIs.

Key Generic Skills

You will be provided with feedback on your progress in attaining the following generic skills:

- analysis skills,
- problem solving skills,
- ability to tackle unfamiliar problems, and
- ability to work independently

Graduate Attributes

The Swinburne Graduate Attributes describe the capability of our graduates to use knowledge, skills and behaviours to contribute to society meaningfully and positively. They include professional, self-directed learning and future-ready skills.

This unit contributes to the development of the following Swinburne Graduate Attributes:

- GA1 Communication - Verbal communication: In class demonstration of lab tasks is required.
- GA2 Communication - Communicating using different media: Students will be using various media to complete different tasks for this unit (ex: online learning activiries, in class lab task demonstrations)
- GA3 Teamwork - Collaboration and negotiation: Students are encouraged to discuss lab tasks in class settings before they proceed to implement.
- GA5 Digital literacies– Information literacy: There are some contents which will be delivered online.
- GA6 Digital Literacies– Technical literacy: There are some online contents and programming tasks for the students.

Graduate attributes may be practiced in the unit but are not formally taught as part of the unit content.

Content

- Server-side scripting language PHP: variables, data types, operations, strings, functions, control statements, arrays, files and directory access, maintaining state
- Web programming approach by using embedded PHP
- Access and manipulation of MySQL
- The Ajax web application development approach
- DOM and CSS used in JavaScript
- Asynchronous content update technologies
- XMLHttpRequest objects used to communicate between clients and servers
- XML and JSON
- XSLT and XPath as mechanisms for transforming XML documents
- Web services and APIs
- Ajax frameworks for contemporary web application development
- Design patterns used in web applications

PART B: Your Unit in more detail

Unit Teaching Staff

Name	Role	Room	Phone	Email	Consultation Times
Dr. Wei Lai	Convenor and Lecturer	EN510b	9214 4391	wlai@swin.edu.au	See the times on Canvas
Dr Shibli Saleheen	Tutor			ssaleheen@swin.edu.au	
Dr Md Kafil Uddin	Tutor			mdkafiluddin@swin.edu.au	
Dr Rao Liaqat	Tutor			rliaqat@swin.edu.au	
Dr Muhammad Islam	Tutor			muhammadislam@swin.edu.au	

Learning and Teaching Structure

Category	Activity	Total Hours	Hours per Week	Teaching Period Weeks
Live Online	Lectures	24 hours	2 hours	Weeks 1 to 12
In person	Tutorials	24 hours	2 hours	Weeks 1 to 12

In a Semester, you should normally expect to spend, on average, twelve and a half hours of total time (formal contact time plus independent study time) a week.

Week by Week Schedule

Week	Week Beginning	Teaching and Learning Activity	Student Task or Assessment
1	Jul 29	Lecture: An Overview and Introduction to Web Application Development Tutorial: Lab 1 - Introduction to Web Application Development	Tutorial Lab 1 exercises and Lab 1 completion in-lab check
2	Aug 5	Lecture: PHP1 - data types, operators, functions and control structures Tutorial: Lab 2 – PHP1	Tutorial Lab 2 exercises and Lab 1/Lab 2 completion in-lab check Project 1 released
3	Aug 12	Lecture: PHP2 - strings, files, directories and arrays Tutorial: Lab 3 – PHP2	Tutorial Lab 3 exercises and Lab 2/Lab 3 completion in-lab check
4	Aug 19	Lecture: MySQL and Manipulating MySQL with PHP Tutorial: Lab 4 – MySQL	Tutorial Lab 4 exercises and Lab 3/Lab 4 completion in-lab check
5	Aug 26	Lecture: Client-Side Processing – JavaScript and DOM Tutorial: Lab 5 – JavaScript and DOM	Tutorial Lab 5 exercises and Lab 4/Lab 5 completion in-lab check
6	Sep 2	Lecture: Ajax Techniques and Working with XML Tutorial: Lab 6 – Ajax Techniques and XML	Tutorial Lab 6 exercises and Lab 5/Lab 6 completion in-lab check Project 1 due Project 2 released
	Sep 9	Mid semester break	
7	Sep 16	Lecture: Ajax Server-Side Technologies and Managing State Information Tutorial: Lab 7 – Ajax Server-Side Technologies and Managing State	Tutorial Lab 7 exercises and Lab 6/Lab 7 completion in-lab check

		Information	
8	Sep 23	Lecture: XPath and XSLT Tutorial: Lab 8 – XPath and XSLT	Tutorial Lab 8 exercises and Lab 7/Lab 8 completion in-lab check
9	Sep 30	Lecture: Web Services and APIs Tutorial: Lab 9 – Web Services and APIs	Tutorial Lab 9 exercises and Lab 8/Lab 9 completion in-lab check
10	Oct 7	Lecture: Debugging, Patterns, Object-oriented PHP and more on Regular Expression Tutorial: Lab 10 – Debugging, OO PHP and Regular Expression	Tutorial Lab 10 exercises and Lab 9/Lab 10 completion in-lab check
11	Oct 14	Lecture: JSON and Framework for Web Application Development Tutorial: Lab 11 – JSON and Patterns	Tutorial Lab 11 exercises and Lab 10/Lab11 completion in-lab check Project 2 due
12	Oct 21	Lecture: Unit Review Tutorial: Lab 12 – Review	Lab 11 completion in-lab check

Assessment

a) Assessment Overview

Tasks and Details	Individual or Group	Weighting	Unit Learning Outcomes that this assessment task relates to	Mapped Graduate Attributes	Assessment Due Date
Tutorial (Laboratory) Exercises	Individual	20% (2% for each lab exercise; total marks capped at 20%)	1,2,3,4,5,6,7	GA1, GA2, GA3, GA5, GA6	One week after each lab (except Lab 11)
Project 1 (system development task)	Individual	35%	1,2,3	GA1, GA2, GA3, GA5, GA6	End of week 6
Project 2 (system development task)	Individual	45%	1,4,5,6	GA1, GA2, GA3, GA5, GA6	End of week 11

Tutorial lab exercises: in the tutorial lab your tutor will check the completion of your completed lab exercises. If you do not manage to complete the exercises during or prior to the lab, they may be assessed by you tutor in the tutorial of the following week but no later.

Projects 1 and 2: In Project 1 you will demonstrate your ability to develop web applications using PHP and MySQL. In Project 2 you will demonstrate your ability to develop web applications using Ajax technologies and demonstrate your research ability to develop web applications using Ajax and other technologies.

b) Minimum requirements to pass this Unit

To pass this unit you must achieve:

- achieve an aggregate mark for the subject of 50% or more

c) Examinations

There is no examination for the unit.

d) Submission Requirements

Assignments and other assessments are generally submitted online through the Canvas assessment submission system which integrates with the Turnitin plagiarism checking service.

Please ensure you keep a copy of all assessments that are submitted.

In cases where a hard copy submission is required an Assessment Cover Sheet must be submitted with your assignment. The standard Assessment Cover Sheet is available from the Submitting work webpage or www.swinburne.edu.au/studentforms/

Detailed submission instructions will be stated in the assignment specifications.

e) Extensions and Late Submission

Extensions for ongoing assessments are available for medical reasons (Doctors certificate must be provided). Students must apply for an extension by emailing the Unit of Study convenor at least 24 hours prior to the due date and also must supply any supporting documentation if requested.

Late Submissions - Unless an extension has been approved, you cannot submit an assessment after the due date. If this does occur, you will be penalised 10% of the assessments worth for each day the task is late up to a maximum of 5 days. After 5 days a zero result will be recorded.

f) Referencing

To avoid plagiarism, you are required to provide a reference whenever you include information from other sources in your work. Further details regarding plagiarism are available in Section C of this document.

Helpful information on referencing can be found at http://www.swinburne.edu.au/lib/studyhelp/harvard-quick-guide.pdf

g) Groupwork Guidelines

Not applicable. All assessments in this unit are individual.

Recommended Reading Materials

There is no prescribed text for this subject. There will be many links provided to online resource in the lectures and on Blackboard

Printed Resources:

- Chris Ullman and Lucinda Dykes, *Beginning Ajax*, WROX, Wiley Publishing, Inc., 2007.
- Don Gosselin, Diana Kokoska and Robert Easterbrooks, *PHP Programming with MySQL, 2nd Edition,* Course Technology, 2011.

On-line books / eBooks / hard copies:

- There are many good books on-line, as eBooks, available through the Library. http://www.swinburne.edu.au/lib/
- Hard copies of the textbook are also reserved in the library.

On-line References:

- Primary references about the Web, Web Servers, PHP, and MySQL are online: see “Blackboard” resources for some useful links.

PART C: FUTHER INFORMATION

For further information on any of the below topics, refer to Swinburne's Current Students web page http://www.swinburne.edu.au/student/.

Student Charter

Please familiarise yourself with Swinburne's Student Charter. The charter describes what students can reasonably expect from Swinburne in order to enjoy a quality learning experience. As students contribute to their own learning experience and to that of their fellow students, the charter also defines the University's expectations of students.

Student behaviour and wellbeing

Swinburne has a range of policies and procedures that govern how students are expected to conduct themselves throughout the course of their relationship with the University. These include policies on expected standards of behaviour and conduct which cover interaction with fellow students, staff and the wider University community, in addition to following the health and safety requirements in the course of their studies and whilst using University facilities.

All students are expected to familiarise themselves with University regulations, policies and procedures and have an obligation to abide by the expected guidelines. Any student found to be in breach may be subject to relevant disciplinary processes. Some examples of relevant expected behaviours are:

- Not engaging in student misconduct
- Ensuring compliance with the University's Anti-Discrimination, Bullying and Violence and Sexual Harassment requirements
- Complying with all Swinburne occupational health and safety requirements, including following emergency and evacuation procedures and following instructions given by staff/wardens or emergency response.

In teaching areas, it is expected that students conduct themselves in a manner that is professional and not disruptive to others. In all Swinburne laboratories, there are specific safety procedures which must be followed, such as wearing appropriate footwear and safety equipment, not acting in a manner which is dangerous or disruptive (e.g. playing computer games), and not bringing in food or drink.

Blackboard

You should regularly access the Swinburne Course Management System (Blackboard) available via http://ilearn.swin.edu.au. Blackboard is regularly updated with important Unit information and communications.

Communication

All communication will be via your Swinburne email address. If you access your email through a provider other than Swinburne, then it is your responsibility to ensure that your Swinburne email is redirected to your private email address.

Plagiarism

Plagiarism is the action or practice of taking and submitting or presenting the thoughts, writings or other work of someone else as though it is your own work. Plagiarism includes any of the following, without full and appropriate acknowledgment to the original source(s):

- The use of the whole or part of a computer program written by another person;
- the use, in essays or other assessable work, of the whole or part of a written work from any source including but not limited to a book, journal, newspaper article, set of lecture notes, current or past student's work, any other person's work, a website or database;
- The paraphrasing of another's work;
- The use of musical composition, audio, visual, graphic and photographic models,
- The use of realia that is objects, artefacts, costumes, models and the like.

Plagiarism also includes the preparation or production and submission or presentation of assignments or other work in conjunction with another person or other people when that work should be your own independent work. This remains plagiarism whether or not it is with the knowledge or consent of the other person or people. It should be noted that Swinburne encourages its students to talk to staff, fellow students and other people who may be able to contribute to a student's academic work but that where independent assignment is required, submitted or presented work must be the student's own.

Enabling plagiarism contributes to plagiarism and therefore will be treated as a form of plagiarism by the University. Enabling plagiarism means allowing or otherwise assisting another student to copy or otherwise plagiarise work by, for example, allowing access to a draft or completed assignment or other work.

Swinburne University uses plagiarism detection software (such as Turnitin) for assignments submitted electronically via Blackboard. Your Convenor will provide further details.

The penalties for plagiarism can be severe ranging from a zero grade for an assessment task through to expulsion from the unit and in the extreme, exclusion from Swinburne. Consequently you need to avoid plagiarism by providing a reference whenever you include information from other sources in your work.

Student support

You should talk to your Unit Convenor or Student Services, for information on academic support services available for Swinburne students.

Special consideration

If your studies have been adversely affected due to serious and unavoidable circumstances outside of your control (e.g. severe illness or unavoidable obligation) you may be able to apply for special consideration (SPC).

Applications for Special Consideration will be submitted via the SPC online tool normally no later than 5.00pm on the third working day after the submission/sitting date for the relevant assessment component.

Special needs

Sometimes students with a disability, a mental health or medical condition or significant carer responsibilities require reasonable adjustments to enable full access to and participation in education. Your special needs can be addressed by Swinburne's Disability Services, who can negotiate and distribute an 'Education Access Plan' that outlines recommendations for university teaching and examination staff. You must notify the University Disability Liaison Officer of your disability or condition within one week after the commencement of a unit of study to allow the University to make reasonable adjustments.

Review of marks

An independent marker reviews all fail grades for major assessment tasks. In addition, a review of assessment is undertaken if your final result is a marginal fail (45-49) or within 2 marks of a grade threshold.

If you are not satisfied with the result of an assessment you can ask the Unit Convenor to review the result. Your request must be made in writing within 10 working days of receiving the result. The Unit Convenor will review your result against the marking guide to determine if your result is appropriate.

If you are dissatisfied with the outcomes of the review you can lodge a formal complaint.

Feedback, complaints and suggestions

In the first instance you may discuss any issues with your Unit Convenor.

If you are dissatisfied with the outcome of the discussions with the Unit Convenor or would prefer not to deal with your Unit Convenor, then you can complete a feedback form.

Advocacy

You are advised to seek advice from the staff at the Swinburne Student Amenities Association (SSAA) if you require assistance with any academic issues.