



ITEC831

Web Applications

S1 Evening 2015

Dept of Computing

Contents

<u>General Information</u>	2
<u>Learning Outcomes</u>	2
<u>Assessment Tasks</u>	3
<u>Delivery and Resources</u>	5
<u>Unit Schedule</u>	6
<u>Learning and Teaching Activities</u>	7
<u>Policies and Procedures</u>	7
<u>Graduate Capabilities</u>	9
<u>Standards</u>	12

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General Information

Unit convenor and teaching staff

Unit Convenor

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E6A-318

Email or by appointment

Lecturer

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Credit points

4

Prerequisites

ISYS303 or COMP332 or COMP345 or COMP333

Corequisites

Co-badged status

Unit description

This unit covers the core technologies that make the internet work. Topics include internet standards for web, mail and related protocols, peer-to-peer services, remote procedure calling (RPC), the provision of secure internet services and the design and deployment of XML applications.

Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at <https://www.mq.edu.au/study/calendar-of-dates>

Learning Outcomes

On successful completion of this unit, you will be able to:

Recall the history of WWW and the key basic technologies which underlie the development of Web applications

Evaluate the most appropriate Web technology for a range of practical Web applications

Explain the key technological issues confronting developers building Web applications

Demonstrate the key features of programming languages which are commonly used for

developing Web applications

Describe the MVC design pattern and construct a Web application using the MVC design pattern

Design, implement and publish a functional Web application using a well-known programming language

Assessment Tasks

Name	Weighting	Due
<u>Assignment 1</u>	15%	Week 5
<u>Mid-term test</u>	15%	Week 6
<u>Assignment 2</u>	20%	Week 12
<u>Final exam</u>	50%	Exam period

Assignment 1

Due: **Week 5**

Weighting: **15%**

The first assignment is a hands-on assignment requiring you to implement a functional Web application by applying the core knowledge learned during the first half of the semester.

This Assessment Task relates to the following Learning Outcomes:

- Implement a functional end-to-end Web application that features current Web technology.

On successful completion you will be able to:

- Demonstrate the key features of programming languages which are commonly used for developing Web applications
- Describe the MVC design pattern and construct a Web application using the MVC design pattern
- Design, implement and publish a functional Web application using a well-known programming language

Mid-term test

Due: **Week 6**

Weighting: **15%**

The mid-term test will be delivered in class and will test your understanding of the core Web

technology. It is scheduled for week 6.

On successful completion you will be able to:

- Recall the history of WWW and the key basic technologies which underlie the development of Web applications
- Evaluate the most appropriate Web technology for a range of practical Web applications
- Explain the key technological issues confronting developers building Web applications

Assignment 2

Due: **Week 12**

Weighting: **20%**

The second assignment is requiring you to develop a basic web application. You will be expected to make a usable Python web application, incorporating all that they have learned so far. More advanced implementations will include security features and some extended functionality.

On successful completion you will be able to:

- Demonstrate the key features of programming languages which are commonly used for developing Web applications
- Design, implement and publish a functional Web application using a well-known programming language

Final exam

Due: **Exam period**

Weighting: **50%**

The final exam will test your understanding of the second half of the course's theoretical material. It is scheduled during the exam period. The examination will be closed book and three (3) hours in length.

Regarding the examination process, note that

- You must attend all required classes and submit all required assessment, otherwise the Executive Dean of the Faculty or delegated authority has the power to refuse permission to attend the final examination
- The University Examination period for First Half Year 2015 is from Tuesday 2nd June to Friday 26th June 2015.
- You are expected to present yourself for examination at the time and place designated in the [University Examination Timetable](#). The timetable will be available in Draft form approximately eight weeks before the commencement of the examinations and in Final

form approximately four weeks before the commencement of examinations

- no early examinations for individuals or groups of students will be set. All students are expected to ensure that they are available until the end of the teaching semester, that is the final day of the official examination period
- The only exception to not sitting an examination at the designated time is because of documented illness or unavoidable disruption. In these circumstances you may wish to consider applying for [Special Consideration](#).

On successful completion you will be able to:

- Explain the key technological issues confronting developers building Web applications

Delivery and Resources

CLASSES

ITEC831 is taught via lectures and practical sessions in the laboratory. **Lectures** are used to introduce new material, give examples of the use of programming methods and techniques and put them in a wider context. While lectures are largely one to many presentations, you are encouraged to ask questions of the lecturer to clarify anything you might not be sure of.

The **practical sessions** will typically be divided in two parts. In the first part, you will practice with problems that are directly related to the week's class topic. In the second part, you are free to work related to the practical assignments. The **practical assignments** will provide you an opportunity to practically learn what it takes to develop a quality Web application.

Each week you should:

1. Read the reading materials and/or notes provided before the lectures, if any
2. Attend lectures, take notes, ask questions to clarify your understanding of the lecture
3. Attend the practical session, seek feedback on your work.
4. Read appropriate sections of the text, add to your notes and prepare questions for your lecturer or tutor.
5. Work on any assignments that have been released.

Lecture notes will be made available each week but these are not a substitute for your own notes or the reading material.

REQUIRED AND RECOMMENDED TEXTS AND/OR MATERIALS

There are no official required or recommended textbooks for ITEC831 this semester. However, extra reading materials and references might be provided during lectures or in the notes from time to time.

TECHNOLOGY USED AND REQUIRED

Technology

The main programming language used is python. Prior knowledge of python is not required but highly recommended. Practical knowledge of a modern programming language like Java, Ruby, or .NET languages are required if you are not familiar with python. If you have not used python before, it is recommended that you get yourself familiar with this programming language via books or online resources such as [Dive Into Python](#).

Several tools and software libraries would be used in the class. You would be introduced to them during the class.

For writing reports, students are also expected to make use of a Word processing tool, such as MS Word or Latex.

Discussion Boards

There will be several forums created on [iLearn](#), general ones for the unit and specific ones for the assessed tasks and assignments. Students are encouraged to post questions and discuss in these forums on iLearn.

SUBMISSION OF ASSESSMENT TASKS

Submissions of all assessment tasks except written exams are to be done via iLearn.

Submission deadlines together with the late submission penalties will be indicated clearly in the corresponding assessment specifications. Resubmission after deadline will not be allowed unless explicitly instructed by the lecturer or tutor.

Extensions of submissions will only be granted under exceptional cases and would be evaluated on a case by case basis. All requests for deadline extension have to be submitted via [academic requests](#).

Unit Schedule

Each week (Thursday 6pm-10pm) you should have 3-4 hours of classes, which are mixed of lectures and practical sessions. The normal schedule of each week is:

- 6-8pm: Lecture at EMC-G230
- 8-10pm: Practical session at EMC-G210 (New lab in EMC building)

For the final details of days, times and rooms of class hours, consult the [timetables webpage](#).

Topic list

Week	Activities	Assessment
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1	Introduction to WWW: History, HTML, HTML5, CSS, JavaScript, Installing XAMPP, PHP and MySQL, PHP Programming	
2	PHP and MySQL: Create, read, update or delete (CRUD) MySQL database records in PHP. Introduction to MVC Design. Purpose and advantages of MVC compared to Web Forms development	
3	CakePHP: MVC development using CakePHP and a simple blog tutorial	
4	Python: Data Types, The if Statement, Loops, Functions	
5	Python: Lists, Dictionaries, Object-Oriented Programming, GUI Programming, Exception Handling	Assignment 1 due Thursday 26 March 2015 at 6pm
6	Mid-semester test	Thursday 2 April 2015
7	Python Webservers: Set Up, CGI, Form Processing	
8	SQLite Databases and Python: SQL basics, creating and manipulating databases	
9	Further SQLite Databases and Python: Building upon previous week	
10	Securing your Applications: XSS, SQL injection	
11	The Flask Framework	
12	jQuery/AJAX	Assignment 2 due Thursday 28 May 2015 at 6pm
13	Wrap-up	

Learning and Teaching Activities

Lecture

Lectures

Mixed-classes

Mixed class tutorials and practicals

Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central](#). Students should be aware of the following policies in particular with regard to Learning and Teaching:

Academic Honesty Policy http://mq.edu.au/policy/docs/academic_honesty/policy.html

Assessment Policy <http://mq.edu.au/policy/docs/assessment/policy.html>

Grading Policy <http://mq.edu.au/policy/docs/grading/policy.html>

Grade Appeal Policy <http://mq.edu.au/policy/docs/gradeappeal/policy.html>

Grievance Management Policy http://mq.edu.au/policy/docs/grievance_management/policy.html

Disruption to Studies Policy http://www.mq.edu.au/policy/docs/disruption_studies/policy.html *The Disruption to Studies Policy is effective from March 3 2014 and replaces the Special Consideration Policy.*

In addition, a number of other policies can be found in the [Learning and Teaching Category](#) of Policy Central.

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/support/student_conduct/

Results

Results shown in *iLearn*, or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in [eStudent](#). For more information visit ask.mq.edu.au.

Student Support

Macquarie University provides a range of support services for students. For details, visit <http://students.mq.edu.au/support/>

Learning Skills

Learning Skills (mq.edu.au/learningskills) provides academic writing resources and study strategies to improve your marks and take control of your study.

- [Workshops](#)
- [StudyWise](#)
- [Academic Integrity Module for Students](#)
- [Ask a Learning Adviser](#)

Student Services and Support

Students with a disability are encouraged to contact the [Disability Service](#) who can provide appropriate help with any issues that arise during their studies.

Student Enquiries

For all student enquiries, visit Student Connect at ask.mq.edu.au

IT Help

For help with University computer systems and technology, visit <http://informatics.mq.edu.au/help/>.

When using the University's IT, you must adhere to the [Acceptable Use Policy](#). The policy applies to all who connect to the MQ network including students.

Graduate Capabilities

PG - Capable of Professional and Personal Judgment and Initiative

Our postgraduates will demonstrate a high standard of discernment and common sense in their professional and personal judgment. They will have the ability to make informed choices and decisions that reflect both the nature of their professional work and their personal perspectives.

This graduate capability is supported by:

Learning outcome

- Design, implement and publish a functional Web application using a well-known programming language

Assessment tasks

- Assignment 2
- Final exam

Learning and teaching activities

- Lectures
- Mixed class tutorials and practicals

PG - Discipline Knowledge and Skills

Our postgraduates will be able to demonstrate a significantly enhanced depth and breadth of knowledge, scholarly understanding, and specific subject content knowledge in their chosen fields.

This graduate capability is supported by:

Learning outcomes

- Recall the history of WWW and the key basic technologies which underlie the development of Web applications
- Demonstrate the key features of programming languages which are commonly used for developing Web applications
- Describe the MVC design pattern and construct a Web application using the MVC design

pattern

- Design, implement and publish a functional Web application using a well-known programming language

Assessment tasks

- Assignment 1
- Mid-term test
- Assignment 2
- Final exam

Learning and teaching activities

- Lectures
- Mixed class tutorials and practicals

PG - Critical, Analytical and Integrative Thinking

Our postgraduates will be capable of utilising and reflecting on prior knowledge and experience, of applying higher level critical thinking skills, and of integrating and synthesising learning and knowledge from a range of sources and environments. A characteristic of this form of thinking is the generation of new, professionally oriented knowledge through personal or group-based critique of practice and theory.

This graduate capability is supported by:

Learning outcomes

- Evaluate the most appropriate Web technology for a range of practical Web applications
- Explain the key technological issues confronting developers building Web applications

Assessment tasks

- Assignment 1
- Final exam

Learning and teaching activities

- Lectures
- Mixed class tutorials and practicals

PG - Research and Problem Solving Capability

Our postgraduates will be capable of systematic enquiry; able to use research skills to create new knowledge that can be applied to real world issues, or contribute to a field of study or practice to enhance society. They will be capable of creative questioning, problem finding and problem solving.

This graduate capability is supported by:

Learning outcomes

- Demonstrate the key features of programming languages which are commonly used for developing Web applications
- Describe the MVC design pattern and construct a Web application using the MVC design pattern
- Design, implement and publish a functional Web application using a well-known programming language

Assessment tasks

- Assignment 1
- Mid-term test
- Assignment 2
- Final exam

Learning and teaching activities

- Lectures
- Mixed class tutorials and practicals

PG - Effective Communication

Our postgraduates will be able to communicate effectively and convey their views to different social, cultural, and professional audiences. They will be able to use a variety of technologically supported media to communicate with empathy using a range of written, spoken or visual formats.

This graduate capability is supported by:

Assessment task

- Assignment 2

Learning and teaching activity

- Lectures
- Mixed class tutorials and practicals

PG - Engaged and Responsible, Active and Ethical Citizens

Our postgraduates will be ethically aware and capable of confident transformative action in relation to their professional responsibilities and the wider community. They will have a sense of connectedness with others and country and have a sense of mutual obligation. They will be able to appreciate the impact of their professional roles for social justice and inclusion related to national and global issues

This graduate capability is supported by:

Learning outcome

- Explain the key technological issues confronting developers building Web applications

Assessment task

- Final exam

Learning and teaching activity

- Lectures

Standards

Knowledge of the key Web technology relevant to practical industry applications.

- (F): Unable to recall or synthesise information about web technology.
- (P): Able to recall simple facts about web technology.
- (C): Able to recall most relevant facts about web technology.
- (D): Able to recall almost all relevant facts about web technology and synthesise some new ideas from these facts.
- (HD): Able to recall almost all relevant facts about web technology and synthesise complex and insightful new ideas from these facts.

Ability to critically evaluate the most appropriate Web technology for a range of practical Web applications.

- (F): Unable to critically evaluate web technology
- (P): Able to make some correct judgements about web technology, with only a few incorrect conclusions.
- (C): Able to consistently make correct judgements about web technology.
- (D): Able to consistently make correct judgements about web technology and to apply those judgements to specific situations.
- (HD): Able to consistently make correct and non-obvious judgements about web technology and to apply those judgements to complex specific situations.

Ability to implement a functional end-to-end Web application that features current Web technology.

- (F): Unable to implement simple web application.
- (P): Able to implement simple web application, with a failure to fully correctly implement at most two parts of the stack.
- (C): Able to implement all parts of a simple web application.

- (D): Able to implement all parts of a complex web application.
- (HD): Able to implement all parts of a complex web application and to use at least one web-service API.

Final Grades

At the end of the semester, you will receive a grade that reflects your achievement in the unit

- **Fail (F)**: does not provide evidence of attainment of all learning outcomes. There is missing or partial or superficial or faulty understanding and application of the fundamental concepts in the field of study; and incomplete, confusing or lacking communication of ideas in ways that give little attention to the conventions of the discipline.
- **Pass (P)**: provides sufficient evidence of the achievement of learning outcomes. There is demonstration of understanding and application of fundamental concepts of the field of study; and communication of information and ideas adequately in terms of the conventions of the discipline. The learning attainment is considered satisfactory or adequate or competent or capable in relation to the specified outcomes.
- **Credit (Cr)**: provides evidence of learning that goes beyond replication of content knowledge or skills relevant to the learning outcomes. There is demonstration of substantial understanding of fundamental concepts in the field of study and the ability to apply these concepts in a variety of contexts; plus communication of ideas fluently and clearly in terms of the conventions of the discipline.
- **Distinction (D)**: provides evidence of integration and evaluation of critical ideas, principles and theories, distinctive insight and ability in applying relevant skills and concepts in relation to learning outcomes. There is demonstration of frequent originality in defining and analysing issues or problems and providing solutions; and the use of means of communication appropriate to the discipline and the audience.
- **High Distinction (HD)**: provides consistent evidence of deep and critical understanding in relation to the learning outcomes. There is substantial originality and insight in identifying, generating and communicating competing arguments, perspectives or problem solving approaches; critical evaluation of problems, their solutions and their implications; creativity in application.

Your final grade depends on your performance in each part of the assessment. For each task, you receive a mark that combines your standard of performance regarding each learning outcome assessed by this task. Then the different component marks are added up to determine your total mark out of 100. Your grade then depends on this total mark and your overall standards of performance.

In particular, in order to pass the unit, you must

- Have satisfactory performance in the examinations (the total score of mid-term and final examination). And
- Have performed satisfactorily in the non-exam assessment components (the total score of assessed tasks, and assignment 1 and 2).

This means that you may fail the unit if you do not submit satisfactory submissions for the assignments or do not perform satisfactorily in the exams.

Department of Computing expectations are that students have to perform satisfactorily in the exams as well as in their internal work/assignments.

Obtaining a grade higher than a Pass (P) in this unit will require a student to obtain (in addition to the above):

- The required total number of marks (Credit - 65, Distinction - 75, High Distinction - 85).