Internet Systems Programming

Semester 1, 2008

Unit Information and Learning Guide
ICT336
Internet Systems Programming

Unit Information and Learning Guide
Semester 1, 2008

Unit Coordinator
Dr Hong Xie
h.xie@murdoch.edu.au

Unit Website
http://www.it.murdoch.edu.au/units/ICT336

This website contains nearly all information about the unit. The Unit Information and Learning Guide, the lecture notes, weekly labs, assignment questions, as well as any announcements will be posted to this website. The information posted to the website will not be sent to students individually.

It is therefore a requirement that every student (both internal and external) checks this website regularly, particularly the Unit Announcement Page, at least once per week.

Unit LMS
https://lms.murdoch.edu.au/

From the ICT336 LMS (previously known as WebCT), you can access the same Unit Website as well as a Discussion Forum and Assignment Submission links. You must submit your assignment via the unit LMS.

Unit Official Front Page

School of Information Technology
CONTENTS

UNIT OUTLINE

ONE  Introduction  i
TWO  Resources for the Unit  v
THREE Lectures and Laboratories  vii
FOUR Assessments  ix
Unit Overview

The focus of this unit is to expand on your technical understanding and proficiency in developing Internet and World Wide Web software. The unit will build on the materials you have learnt in B108/ICT108 Introduction to Multimedia and the Internet. Students who have completed B211/ICT211 Internet Computing will find the material in B211/ICT211 useful as well.

Students should start the semester already having a basic understanding of how the Internet and the WWW works. In this unit, students will be given the chance to explore the detailed nuts and bolts of key technologies, by having hands on experience in writing and managing the software that forms the basis of these technologies.

Students enrolled in this unit should expect very heavy programming work. Students are expected to have good fundamental programming skills.

Learning Objectives

Your learning objectives for this unit are:

1. To understand in detail the technical workings of key Internet and web technologies, specifically web communications (HTTP clients and servers), web application programming, and XML technologies.
2. Be able to write software that drives the technologies in (1).
3. Understand the basic requirements needed to construct Internet solutions for organisations and enterprises.
4. Develop skills in self-learning, communications, research, trial-and-error, etc to derive Internet solutions.

To allow students to achieve these objectives, the content of this unit can be broadly seen in two respects:
a) Material given to you in lectures, study guide, and laboratories to give you the foundations for objectives 1, 2 and 3 above. All assignments and the end-of-semester examinations will assess your progress in achieving these objectives.

b) Information and skills you pick up yourself, while completing assignments, reading extra references given in the lectures and labs, and participating in the discussion forum. This will help you achieve objective 4.

It is a fundamental requirement for anyone to be proficient in the ever-changing world of the Internet that the person has capabilities to independently upgrade their skills and expand their knowledge base. It is for that reason that objective 4 is such a critical part of this unit. For that reason, part of your assessment will be on evidence that you are able to do so. Assessment components where you are expected to gather material OUTSIDE of the course content or more in depth than that which is presented in the lectures and labs will be stated in the assessment description.

See section four of this unit outline for details of the assessments.

**Prerequisites**

Students are expected to have completed

- B102/ICT102 Introduction to Computer Science, and

**Unit Coordinator**

Your coordinator for this unit is **Dr Hong Xie**, in the School of Information Technology.

**Contact Details:**

**Unit Coordinator**

Dr Hong Xie  
Room (South St campus): ECL3.059  
Tel: +61 8 9360 6087  
Email: h.xie@murdoch.edu.au

**Administration**

The Administrative Secretary for the School of Information Technology  
Office: ECL3.037  
Phone: (08) 9360 2697.
**Unit Timetable**

There are one three-hour lecture and one two-hour supervised tutorial/lab each week. The lectures are divided into 12 topics. The unit is taught at the pace of roughly one topic per teaching week during the semester. The following table lists the weekly lecture topics and labs.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Lecture Contents</th>
<th>Lab Exercises (assessed)</th>
</tr>
</thead>
</table>
| 1     | Unit Introduction  
Web clients and servers  
Web server configuration and administration using Apache | Lab Introduction and Apache installation |
| 2     | Introduction to Perl programming | Configuring and administering Apache |
| 3     | Implementing a web client | Introduction to Perl Programming |
| 4     | Implementing a web server | Implementing a web client |
| 5     | The XML Document  
The Document Type Definition (DTD) | Implementing a web server |
| 6     | Navigating XML Tree with XPath | Writing and validating XML documents |
| 7     | XML Namespace  
XML Schema | Working with XPath expressions |
| 8     | Transforming XML Documents with XSLT | Validating XML documents with Schemas |
| 9     | XML parsing and processing using Perl  
XML parsing and processing in Other Programming Languages | Transforming XML Documents using XSLT |
| 10    | Introduction to Web Services  
SOAP, WSDL and UDDI | Implementing XML parsers and processors with Perl |
| 11    | An Example SOAP Service  
An Example WSDL Document  
UDDI | Implementing a SOAP service |
| 12    | Developments in Web Service Programming  
Unit Review and Conclusion | Review |

For up-to-date information on the time and venue of the lectures and labs, please consult the Unit Information page of the Unit Website. For the week-by-week lecture topics and labs, please consult Teaching Schedule page of the Unit Website.
The details of the Unit Website are given in the next Section Two.

You can find the University's principal dates in the following web page:

Resources for the Unit

Unit Website and WebCT

The unit website is

http://www.it.murdoch.edu.au/units/ICT336

This website contains nearly all information about the unit. The unit outline, the lecture notes, weekly labs, assignment questions, as well as any announcements will be posted to this website. The information posted to the website will not be sent to students individually. It is therefore a requirement that every student (both internal and external) checks this website regularly, particularly the Unit Announcement page at least once per week.

In addition to the above Unit Website, the unit also has a Unit Welcome Page at:


which contains some general information about assessments and penalty for plagiarisms.

The unit’s LMS (previously known as WebCT) is accessible from the following address:

https://lms.murdoch.edu.au/

All students enrolled in the unit will be given access to the LMS. In addition to all information available from the Unit Website, the Unit LMS also contain a Discussion Forum and an Assignment Submission links. All assignments must be submitted using the Unit LMS.
Unit Materials

Unit Outline
ICT336 Unit Information and Learning Guide and for Semester 1, 2008

This document is also referred as "Unit Outline" in the unit materials and Unit Website. It can be downloaded free of charge from Unit Website either in PDF format.

Essential Textbook
Anders Moller and Michael Schwartzbach:

An Introduction to XML and Web Technologies.

Addison-Wesley, 2006.


Unit Reader
ICT336 Unit Reader for Semester 1 2008

This document can be bought from Murdoch Bookshop. It contains copies of seven book chapters that will be used in the unit. The following is the list of these book chapters:

ONE Web Servers, Chapter 4 in Web Protocols and Practice by Balachander Krishnamurthy & Jennifer Rexford, Addison-Wesley, 2001


SEVEN Excerpt from The Dilbert Future, Scott Adams, Boxtree, 1997.

Online Books
This unit makes use of the following online books, available from the University library. Web links to these only books are available in the Unit Readings page of the Unit Website.
• Web Services Essentials by Ethan Cerami, O'Reilly, 2002 - Chapters 1, 6, 7.
• Programming Perl (3rd Edition) by Larry Wall, O'Reilly, 2000 - for reference during practical work.

Computing Facilities

On-campus Students

The laboratory used for this unit will be announced in lectures during the first week of the semester, and is available during normal opening hours of 9am to 5pm. Arrangements to use laboratories outside these hours can be made by seeing the Secretary of the School of IT in ECL Building. You will need your Student identity card and a special pass to use the laboratory.

Off-campus Students

External students must arrange their own access to a computer. The computer must have Internet access. Besides accessing the on-line unit materials, external students will also need to use the computer for programming exercises in assignments.

External students are not required to purchase any software of their own. All software required for this unit is either on a server, or is in the public domain. Further instructions on accessing the server will be given as the semester progresses. Instructions on software to download for home use is available at:


There are various ways of getting Internet access. Refer to the following page for advice on how to gain Internet access:

Lectures and Laboratories

Lectures

There will be 3 hours of lectures every week, in the 12 teaching weeks of the semester. Attendance in the lectures is not compulsory, but is highly recommended for internal students. Instructions relevant for internal students may be given in the lectures. The timetable for the lectures can be found at:


The overheads used in the lectures will be put up on the Unit Website after the relevant lectures. These overheads only contain points used in the lecture presentation. They are not substitutes for lecture attendance and the prescribed reading. The lecture overheads will be available at:


The online lecture overheads are password protected. The username and password required to access the overheads will be made available in the first lecture. External students should request the username and password from your tutor by sending an email containing your full name and student number.

Laboratory Session

There will be 12 labs during the semester – one lab per teaching week. The lab exercises will involve programming work related to material given in the lectures. More specific information about using the relevant software will be supplied. The lab exercises are critical to your understanding of the Internet. You will not be able to complete (or even start) the assignments without doing the exercises.

You will be allocated a tutor responsible for:
1. assisting you in the lab exercises every week,
2. assessing your laboratory exercise work,
3. marking all your assignments
4. answering any queries related to the unit material.
Every internal student will be required to sign up for a two-hour lab session every week. Internal students should sign up their tutorials on Calista using MyInfo website account.
Links to the lab exercises every week will be put in the following page as the semester progresses:

The online lab exercise sheets are password protected. The username and password required to access the exercises will be made available in the first lecture. External students should contact your tutors to get the username and password.
FOUR
Assessments

Assessment components

You will be assessed on the basis of two assignments, your weekly lab exercises, and the final examination.

<table>
<thead>
<tr>
<th>Assessment Component</th>
<th>Description</th>
<th>Weighting</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Exercises</td>
<td>Assessable components of lab exercises</td>
<td>15%</td>
<td>See each lab sheet</td>
</tr>
<tr>
<td>Assignment 1</td>
<td>Apache installation and management Implementing a web server and client</td>
<td>20%</td>
<td>See Unit Website</td>
</tr>
<tr>
<td>Assignment 2</td>
<td>XML solutions</td>
<td>20%</td>
<td>See Unit Website</td>
</tr>
<tr>
<td>Examination</td>
<td>Questions on materials from lectures, labs, and required readings.</td>
<td>45%</td>
<td>Examination period</td>
</tr>
</tbody>
</table>

Assignments

The questions and descriptions of the assignments may be found at the following page of the Unit Website in due course.


Important Note

Please read the University’s policies on Dishonesty and Plagiarism (http://www.murdoch.edu.au/teach/plagiarism/). The unit coordinator and the University views issues of dishonesty in assessments very seriously. You may from time to time come across programs and scripts on the web that may be appropriate as solutions for the assignments. Students may not submit such downloaded material for assessment, UNLESS:

1. The student enhances the downloaded material significantly, in line with the unit’s objectives (see section 1 of this Unit Outline).
2. The student notifies the unit coordinator BEFORE submitting the work, and fully documents the parts of the work that is theirs.

The reason for allowing students to enhance downloaded work is because most work in Internet development is about building on other people work and components to make better products. What is NOT acceptable is when developers pass work other people work off as their own.
Do not test the unit coordinator’s ability to detect plagiarised work when you do not include appropriate acknowledgements. It takes quite considerable effort to modify someone else’s work to pass off as your own. The Unit Coordinator in this unit will go to great lengths to ensure plagiarised work are detected and dealt with.

Assignment submission

The assignment question sheets will be posted in the Unit Website at least three weeks before the due dates. The deadline and how the assignment must be submitted will be specified in the assignment question sheet. You must adhere to those submission requirements strictly. Your assignment will not be marked if you fail to adhere to those requirements.

Be sure to keep a copy of all your work submitted in for assessment in the event it is accidentally lost, misplaced, tutors room has a fire, building collapses due to earthquake, etc..

Late submissions and application for extension of assignment deadline

Late assignments will have 5% of the student’s raw mark deducted per day.

Unless you have exceptional circumstances, be advised that late submissions will incur a penalty of 5% of the total raw marks per day (including weekends and public holidays). Work submitted more than 10 days late will not be marked. You are not permitted to haggle with your tutor regarding a late submission of your assignment. Your only course of action is to contact the unit coordinator.

Please note that reasons which are not sufficient to warrant an extension include computer failures; car failures or other transportation difficulties; work conflicts, other study commitments, and dog eating your assignments. ‘Losing’ work through "computer failure" is not accepted as a reason for late submission of an assignment; students using a computer should know to frequently save and backup your work. Also, you should identify conflicts with other work and study commitments at the beginning of semester and schedule your time accordingly. If you are unable to do so, contact the unit coordinator for advice and special arrangements.

Applications for extension of your assignment deadline can only be made via email to the unit coordinator, normally prior to the specified due date of the assignment or project.

If an extension is granted (also by email), you must attach a copy of the email to your submission. Applications for extension by phone or in person do not count – even if granted.
Please be aware that Friday Week 14 is the final submission date of your assignment (if extension is granted by unit coordinator). After this date, (or if directed by the unit coordinator when prior to this date) written application for deferred assessment has to be lodged with and approved by the Registrar's Office in accordance with the deferred assessment procedures given in Degree Regulation 46. (See University handbook). Deferred assessment can only be approved by the Director of Student Services.

**Grievance with assignment marking**

Once you have received your marked assignment, if you have any grievance with the marking, you must raise it with your Unit Coordinator by email, **within 7 days of receiving the marked assignment, or within the announced deadline in the Unit Website, whichever is earlier.** Otherwise the marks awarded to you will be final and will be used to calculate your final weighted average score for the unit.

**Lab Exercises**

There will be 12 Weekly labs starting from Week 1.

The lab exercises from Lab 2 to Lab 11 will include sections that are assessed. The requirements for the assessment will be described in the lab exercises each week, given at:


Internal students (options D) should demonstrate to their tutors that they have completed the lab exercises during the lab sessions specified in the relevant lab sheet. No marks will be given if the student does not demonstrate they have completed their work within that time. Hardcopy submissions or electronic submissions are neither required nor accepted unless there is a prior arrangement with your tutor.

External students (options X) should submit answers and programs required for assessment from the lab exercises according to the deadlines given in the lab sheets.

**Examination**

The final examination will be of 3 hours duration and held during the examination period at the end of the semester. It will be closed book exam. The questions in the exam will assess your understanding of the materials in the lectures, assignments and labs.

Further guidelines to the examinations, as well as sample examinations will be available on the Unit Website reaching the end of the semester.
On-campus students (internal or external) are expected to take the examination on campus, while arrangements will be made for off-campus students to take the final examination locally.

The University requires that all students sitting end-of-semester examinations (including those held off-campus) must show their current Murdoch University Student Card to facilitate photographic identification. **No other form of identification will be accepted.**

Students may inspect their marked examination scripts and discuss the marking with the unit coordinator within 14 days of the posting of results (Degree Regulation 43).

**Determination of the final grade**

In order to pass this unit you must achieve a satisfactory performance (at least 50 out of 100) in the weighted average score of all assessment components.

Note your weighted average will be rounded into the nearest whole number. For example, if you weighted average is 59.4, your score is rounded down to 59. However if your weighted average is 59.5, it will be rounded up to 60.

Once you have satisfied the above requirement, your final grade for the unit will be based on this weighted average score. Your final grade will be reported by a letter grade according to the following percentage ranges of your weighted average score.

<table>
<thead>
<tr>
<th>Notation</th>
<th>Grade</th>
<th>Percentage Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>HD</td>
<td>High Distinction</td>
<td>80 – 100</td>
</tr>
<tr>
<td>D</td>
<td>Distinction</td>
<td>70 – 79</td>
</tr>
<tr>
<td>C</td>
<td>Credit</td>
<td>60 – 69</td>
</tr>
<tr>
<td>P</td>
<td>Pass</td>
<td>50 – 59</td>
</tr>
<tr>
<td>UP</td>
<td>Ungraded Pass</td>
<td>50 or above</td>
</tr>
<tr>
<td>N</td>
<td>Fail</td>
<td>Below 50</td>
</tr>
<tr>
<td>DNS</td>
<td>Fail</td>
<td>Fail, did not submit any assessments after HECS census date</td>
</tr>
<tr>
<td>S</td>
<td>Supplementary Assessment</td>
<td>45 – 49*</td>
</tr>
</tbody>
</table>

*The award of the grade of S shall be at the discretion of the Unit Coordinator.


**University policy on assessment**
Refer to the links on the unit official front page for the University’s policies on assessments.

**University Census Dates**

Semester 1: 14\textsuperscript{th} March 2008  
Semester 2: 29\textsuperscript{th} August 2008