



ITEC830

XML Technologies

S2 Evening 2014

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>Policies and Procedures</u>	6
<u>Graduate Capabilities</u>	8
<u>Changes from Previous Offering</u>	10
<u>Grading Standards</u>	10

Disclaimer

Macquarie University has taken all reasonable measures to ensure the information in this publication is accurate and up-to-date. However, the information may change or become out-dated as a result of change in University policies, procedures or rules. The University reserves the right to make changes to any information in this publication without notice. Users of this publication are advised to check the website version of this publication [or the relevant faculty or department] before acting on any information in this publication.

General Information

Unit convenor and teaching staff

Unit Convenor

Diego Molla-Aliod

diego.molla-aliod@mq.edu.au

Contact via diego.molla-aliod@mq.edu.au

E6A331

See <http://web.science.mq.edu.au/~diego/>

Lecturer

Rolf Schwitter

rolf.schwitter@mq.edu.au

Contact via rolf.schwitter@mq.edu.au

E6A333

Credit points

4

Prerequisites

COMP344 or COMP348

Corequisites

Co-badged status

Unit description

A thorough introduction to the technological fundamentals of web-based e-commerce, emphasising the application of XML (eXtensible Markup Language) as a tool for structuring transactions and organising complex dynamic information. Topics include document computing (webservers, XML, XSLT), web services (application servers, SOAP), XML data formats and standards, meta-data, and XML databases.

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:

Explain the main XML technologies such as: XML, XML Schema, XPath, XSLT, and XQuery.

Design and develop functional end-to-end applications that feature XML technologies.
Critically evaluate the most appropriate XML technologies for a range of applications.
Compare existing and assess emerging Semantic Web Technologies.

Assessment Tasks

Name	Weighting	Due
<u>Six Practical Tasks</u>	10%	Week 2, 4, 6, 8, 10, 12
<u>Assignment 1</u>	20%	Week 8
<u>Assignment 2</u>	20%	Week 12
<u>Final Examination</u>	50%	TBA

Six Practical Tasks

Due: **Week 2, 4, 6, 8, 10, 12**

Weighting: **10%**

These are six individual practical programming tasks, each worth 2 marks. Note that you can only get 10 marks in total for these six tasks; that means you can get full marks if you submit 5 perfect solutions.

You have to submit the solutions to these tasks via iLearn at a specific date. No extensions will be granted. Students who have not submitted the solution prior to the deadline will be awarded a mark of 0 for the task, except for cases in which an application for special consideration is made and approved.

On successful completion you will be able to:

- Explain the main XML technologies such as: XML, XML Schema, XPath, XSLT, and XQuery.
- Design and develop functional end-to-end applications that feature XML technologies.
- Critically evaluate the most appropriate XML technologies for a range of applications.
- Compare existing and assess emerging Semantic Web Technologies.

Assignment 1

Due: **Week 8**

Weighting: **20%**

In this individual assignment students will use XSLT technologies to extract information from different XML documents and transform this information into an HTML format that can be displayed in a web browser with the help of a cascading stylesheet.

Students have to submit the solution to this assignment via iLearn at a specific date. No extensions will be granted. Students who have not submitted the solution prior to the deadline will be awarded a mark of 0 for the task, except for cases in which an application for special consideration is made and approved.

On successful completion you will be able to:

- Explain the main XML technologies such as: XML, XML Schema, XPath, XSLT, and XQuery.
- Design and develop functional end-to-end applications that feature XML technologies.
- Critically evaluate the most appropriate XML technologies for a range of applications.

Assignment 2

Due: **Week 12**

Weighting: **20%**

In this individual assignment students will explore and query semi-structured XML data. These XML data are real data and feature some of the problems that you may encounter in semi-structured data, such as possibly malformed XML, inconsistencies in the XML labels, and free text embedded in the XML. As part of the assignment, the student will write a report that describes what approach they followed to explore, manipulate and query the XML data. The report must address general audience which are not familiar with the technology.

Students have to submit the code and report via iLearn at a specific date. No extensions will be granted. Students who have not submitted the solution prior to the deadline will be awarded a mark of 0 for the task, except for cases in which an application for special consideration is made and approved.

On successful completion you will be able to:

- Design and develop functional end-to-end applications that feature XML technologies.
- Critically evaluate the most appropriate XML technologies for a range of applications.

Final Examination

Due: **TBA**

Weighting: **50%**

The final examination will be a three-hour examination held during the usual University examination period and will cover all topics of this unit.

On successful completion you will be able to:

- Explain the main XML technologies such as: XML, XML Schema, XPath, XSLT, and XQuery.
- Design and develop functional end-to-end applications that feature XML technologies.

- Critically evaluate the most appropriate XML technologies for a range of applications.
- Compare existing and assess emerging Semantic Web Technologies.

Delivery and Resources

Delivery

ITEC830 is taught via lectures and practical sessions in the laboratory. Lectures are used to introduce new material, give examples of the use of XML technologies and related technologies and put them in a wider context. While lectures are largely one to many presentations, you are encouraged to ask the lecturer questions to clarify anything you might not be sure of. Practical sessions give you an opportunity to practice your design and programming skills under the supervision of a practical demonstrator. Each week you will be given a number of problems to work on and a number of these problems will be assessed; it is important that you keep up with these tasks as doing so will help you understand the material in the unit and prepare you for the work in assignments.

Each week you should:

- Attend lectures, take notes, ask questions.
- Attend the practical sessions, solve as many of the practical problems as you can and seek feedback from the practical demonstrator on your work.
- Read appropriate sections of the recommended textbook, add to your notes and prepare questions for your lecturer or tutor.
- Work on any assignments that have been released.

Lecture notes will be made available each week but these notes are intended as an outline of the lecture only and are not a substitute for your own notes or assigned reading material.

Resources

There is no required textbook for ITEC830 but a recommended one that is available as eBook in Macquarie University's library:

- Joe Fawcett, Danny Ayers, Liam R. E. Quin. *Beginning XML*. 5th Edition, John Wiley & Sons, Inc. 2012.

Additionally, we will provide notes or references to freely available material where relevant.

We will use the following software in ITEC830:

- XML Copy Editor 1.2.x
- Python 3.4.1 (and various Python modules)
- BaseX 7.9
- Feedparser 5.1.3
- lxml 3.3.5
- Saxon 9.5 (Home Edition)

- Protege

Note that we only use software that is available for free. That means you can download this software and use it at home as well as in the computer labs.

Unit Schedule

WEEK	TOPIC	Recommended Reading
1	XML Introduction	Beginning XML, Fawcett et al., 2012: Chapters 1-3
2	XML Validation	Beginning XML, Fawcett et al., 2012: Chapters 4+5
3	XML Data Extraction	Beginning XML, Fawcett et al., 2012: Chapter 7
4	XML Transformations	Beginning XML, Fawcett et al., 2012: Chapter 8
5	XML and Databases	Beginning XML, Fawcett et al., 2012: Chapter 9+10
6	XML Applications	Beginning XML, Fawcett et al., 2012: Chapter 13
7	XML and DOM	W3C DOM
8	XML and SAX	Beginning XML, Fawcett et al., 2012: Chapter 11
9	XML Retrieval	XML Retrieval, Lalmas, 2009
10	XML and the Web	Beginning XML, Fawcett et al., 2012: Chapter 14&16
11	XML and Linked Data	RDF 1.1 Primer
12	XML and the Semantic Web	OWL 2 Primer (Second Edition)
13	Review for Exam	

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/

Department of Computing Special Consideration Policy

If you apply for Special Consideration and it is judged by the Department of Computing that your performance on an examination has been affected adversely by the circumstances documented in the consideration request, you will be required to sit a Supplementary Examination. The Supplementary Examination will normally be scheduled after the official examination period, but may be earlier in the case of a mid-semester examination. For details see the [Special Consideration policy specific to the Department of Computing](#).

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 - 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

- Explain the main XML technologies such as: XML, XML Schema, XPath, XSLT, and XQuery.
- Design and develop functional end-to-end applications that feature XML technologies.
- Critically evaluate the most appropriate XML technologies for a range of applications.
- Compare existing and assess emerging Semantic Web Technologies.

Assessment tasks

- Six Practical Tasks
- Assignment 1
- Assignment 2
- Final Examination

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

- Design and develop functional end-to-end applications that feature XML technologies.
- Critically evaluate the most appropriate XML technologies for a range of applications.

Assessment tasks

- Six Practical Tasks
- Assignment 1
- Assignment 2
- Final Examination

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 outcome

- Design and develop functional end-to-end applications that feature XML technologies.

Assessment tasks

- Six Practical Tasks
- Assignment 1
- Assignment 2
- Final Examination

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:

Learning outcomes

- Critically evaluate the most appropriate XML technologies for a range of applications.
- Compare existing and assess emerging Semantic Web Technologies.

Assessment tasks

- Assignment 1
- Assignment 2

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

- Compare existing and assess emerging Semantic Web Technologies.

Assessment tasks

- Assignment 2
- Final Examination

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

- Critically evaluate the most appropriate XML technologies for a range of applications.

Assessment tasks

- Assignment 2
- Final Examination

Changes from Previous Offering

This year we will allow more time for covering the Python programming language, to accommodate those students who have little programming experience. The part about the Semantic Web is updated with new developments about linked data. The overall assessment structure is based on past offerings.

Grading Standards

We will use standards based assessment to reflect the level of performance students achieve in this unit. The standard levels (HD, D, CR, and P) summarize different levels of achievement in relation to learning outcomes (LO1-LO4) and are defined below.

Grade	LO1	LO2	LO3	LO4
	Explain the main XML technologies such as: XML, XML Schema, XPath, XSLT, and XQuery.	Design and develop functional end-to-end applications that feature XML technologies.	Critically evaluate the most appropriate XML technologies for a range of applications.	Compare existing and assess emerging Semantic Web Technologies.

HD	Demonstrate extensive knowledge and understanding of XML technologies. Show deep insight into how these technologies depend on each other.	Can design and implement XML-based applications that are fully compliant with a given specification. Show sophisticated programming skills and write excellent code documentation.	Suggest the best combination of XML technologies for novel application scenarios. Provide convincing and creative arguments for the selection of these technologies.	Outstanding Semantic Web survey. In-depth understanding and very clear presentation of this topic. Excellent writing skills with a highly realistic assessment of emerging technologies.
D	Demonstrate good knowledge and understanding of XML technologies. Able to explain how these technologies depend on each other.	Can design and implement XML-based applications that are compliant with a given specification. Show good programming skills and write good code documentation.	Propose a good combination of XML technologies for novel application scenarios. Provide good arguments for the selection of these technologies.	Good Semantic Web survey. Thorough understanding and clear presentation of the topic. Good writing skills with a realistic assessment of emerging technologies.
CR	Demonstrate satisfactory knowledge and understanding of XML technologies. Able to explain how these technologies depend on each other in most cases.	Can design and implement XML-based applications that follow a given specification. Show sound programming skills and write understandable code documentation.	Put forward a combination of XML technologies for novel application scenarios. Provide satisfactory arguments for the selection of these technologies.	Satisfactory Semantic Web survey. Sound understanding and acceptable presentation of the topic. Sufficient writing skills with a mostly realistic assessment of emerging technologies.
P	Demonstrate basic knowledge and understanding of XML technologies. Able to sketch how some of these technologies are used in isolation.	Can design and implement XML-based applications that mostly follow a given specification. Show basic programming skills and write elementary code documentation.	Communicate how standard XML technologies for novel application scenarios can be used. Provide basic arguments for the use of these technologies.	Basic Semantic Web survey. Fundamental understanding and presentation of the topic. Basic level writing skills with unrealistic assessment of emerging technologies.

Your final grade will depend on your performance in each part separately. In order, to **pass** the unit you must:

- gain more than 50% of the total marks of the unit and more than 45% in the final examination;
- submit a reasonable attempt to both assignments;
- submit a reasonable attempt to **at least three** practical tasks.

All assignments and submissions to practical tasks should be handed in via [iLearn](#) by the time stated in the relevant specification.

If you cannot submit on time because of illness or other circumstances, please contact the lecturer **before** the due date, otherwise we cannot accept your submission.

Grade Descriptors

The following grade descriptors are used that provide university-wide standards for awarding final grades.

High Distinction 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 as

appropriate to the discipline.

Distinction 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.

Credit 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; convincing argumentation with appropriate coherent justification; communication of ideas fluently and clearly in terms of the conventions of the discipline.

Pass Provides sufficient evidence of the achievement of learning outcomes. There is demonstration of understanding and application of fundamental concepts of the field of study; routine argumentation with acceptable justification; 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.

Fail Does not provide evidence of attainment of learning outcomes. There is missing or partial or superficial or faulty understanding and application of the fundamental concepts in the field of study; missing, undeveloped, inappropriate or confusing argumentation; incomplete, confusing or lacking communication of ideas in ways that give little attention to the conventions of the discipline.