ITEC832

Enterprise Application Integration

S1 Evening 2014

Computing

Contents

General Information

Unit convenor and teaching staff
Unit Convenor
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Credit points
4

Prerequisites
ISYS301

Corequisites

Co-badged status

Unit description
This unit focuses on integration technologies from internal application integration to external business-to-business integration. Integration activities start with a process model and process redesign targets. We use the market leading IBM WebSphere business process modelling software to define our processes. Application integration techniques such as data orientated, application interfaces, message orientated middleware and application servers are covered. We then consider B2B integration with EDI and Web Services, and the role of portals. We explore the objectives of business process management and supply chain planning and consider a real e-marketplace case study and an innovative government integration initiative.

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:

Be able to use process modelling software to describe, and derive appropriate metrics, for an 'As Is' process and proposed improved 'To Be' processes.

Be able to compare and contrast application integration technologies such as APIs, database integration, application servers and business process management systems.

Understand and be able to describe the future of business to business integration with web services based SOA, API based WOA and intelligent business process

management suites.

Be able to describe the application of contemporary technologies in a recent successful B2Bi case study involving a one to many relationship.

Confidence in leadership skills; communication skills; critical analysis skills; problem-solving skills and creative thinking skills.

Assessment Tasks

Name	Weighting	Due
Assignment 1	15%	26/03/2014
Assignment 2	10%	9/4/2014
Group Assignment	25%	4/06/2014
Final Examination	50%	TBA

Assignment 1

Due: **26/03/2014**
Weighting: **15%**

You are given an actual hospital procurement process. This is to be modeled as the 'As Is' Process using IBM Websphere process modeler. Metrics such as process cost and time are to be derived. Based on the objectives of business process reengineering, an automated, improved 'To Be' process is to be proposed. The new process is to be assessment according to the modeling metrics as well as a SWOT analysis and ROI justification.

On successful completion you will be able to:

- Be able to use process modelling software to describe, and derive appropriate metrics, for an 'As Is' process and proposed improved 'To Be' processes.
- Confidence in leadership skills; communication skills; critical analysis skills; problem-solving skills and creative thinking skills.

Assignment 2

Due: **9/4/2014**
Weighting: **10%**

You are given a well researched case study about the introduction of electronic medical records in the US. The case highlights the technological, management and organizational challenges of this immense application integration undertaking. Students are required to answer questions about the case study and provide As Is and To Be process models for one of the system's components.

On successful completion you will be able to:

- Be able to compare and contrast application integration technologies such as APIs, database integration, application servers and business process management systems.

- Understand and be able to describe the future of business to business integration with web services based SOA, API based WOA and intelligent business process management suites.

- Confidence in leadership skills; communication skills; critical analysis skills; problem-solving skills and creative thinking skills.

Group Assignment

Due: **4/06/2014**
Weighting: **25%**

Groups of 4 students will work as a team to complete a significant study of an industry supply chain opportunity.

The hospital supply chain has been chosen as a case study in business to business integration based on the high level of current government sponsored and private initiatives and potential for efficiency gains.

A Process Reengineering Report is required. The team is to act as 'Consultants', hired by the Area Health Service Chief Executive to investigate a documented 'As Is' Process and assess a recommended 'To Be' Process. The team is to submit both a detailed report and give a 20 minute presentation, outlining their findings and rationale. This will involve process reengineering and costing. Then, resolving the business to business integration technologies and feasibility (reliability, security, ROI etc.) with a recommended system architecture and justification.

Furthermore, from Weeks 5 to 10 each group will be required to present to the class a component of a real case study in B2Bi involving a one to many relationship, PBS Online. All the necessary reference material will be provided for analysis by the group and presentation to the class.

On successful completion you will be able to:

- Be able to use process modelling software to describe, and derive appropriate metrics, for an 'As Is' process and proposed improved 'To Be' processes.

- Be able to compare and contrast application integration technologies such as APIs, database integration, application servers and business process management systems.

- Understand and be able to describe the future of business to business integration with web services based SOA, API based WOA and intelligent business process

management suites.

- Be able to describe the application of contemporary technologies in a recent successful B2Bi case study involving a one to many relationship.
- Confidence in leadership skills; communication skills; critical analysis skills; problem-solving skills and creative thinking skills.

Final Examination

Due: **TBA**
Weighting: **50%**

Your final grade will depend on your performance in each part separately. In particular:

- You must perform satisfactorily in the examination in order to pass this unit.
- You must submit a reasonable attempt to all assignments.

On successful completion you will be able to:

- Be able to use process modelling software to describe, and derive appropriate metrics, for an 'As Is' process and proposed improved 'To Be' processes.
- Be able to compare and contrast application integration technologies such as APIs, database integration, application servers and business process management systems.
- Understand and be able to describe the future of business to business integration with web services based SOA, API based WOA and intelligent business process management suites.
- Confidence in leadership skills; communication skills; critical analysis skills; problem-solving skills and creative thinking skills.

Delivery and Resources

Each week you should attend up to 4 hours of lectures and tutorials. For details of days, times and rooms consult the timetables webpage.

Please note that you will be **required** to attend 80% of the lectures and hand in prepared work as required. Failure to do so may result in you failing the unit or being excluded from the exam.

Required and Recommended Texts

- David S. Linthicum (2009) Cloud Computing and SOA Convergence in Your Enterprise: A Step-by-Step Guide, Addison Wesley, Sydney

David Linthicum has written a number of excellent books on the topic of application integration and you are encouraged to borrow his earlier books from the general section of the library.Lecture handouts will list appropriate Web based

references and further reading for some of the rapidly evolving technologies discussed in this course. All the lecture handouts and soft copy references will be available for download from the class Web site from Week 1 at: https://ilearn.mq.edu.au/ You will need to use the user name and password issued to you by the Faculty of Science when you enrolled for the unit.

Technology to be used and required:

We are using IBM BPM Workbench for process modeling. This app will be available in the EMC lab.

Other technology required is MS Word and MS PowerPoint.

Submission methods for assessment tasks:

All soft copy assignment submissions and return of marks and comments will be done through the ITEC832 page on iLearn.

Late submission:

Late submission of individual work will incur a 10% penalty for every 24 hours, or part thereof, it is late. So within 24 hours, the maximum mark that can be obtained is 90% of the full grade for that assessment task; between 24 and 48 hours, the maximum mark that can be obtained is 80% of the full grade; and so on. No extra documentation is required unless the student does wish to have an extension (see below) applied.

Late submissions of group based assignments are not permitted unless under exceptional circumstances with documentary evidence provided to the unit convenor which may include medical certificates as per the Department of Computing policy. One person being sick does not mean the group cannot submit work. Students are recommended to have a backup plan for group based submissions.

Extensions:

Extensions without a grade penalty may be provided to groups or individuals who contact the unit convenor BEFORE the due date and can provide documentary evidence of illness or other misadventure. If approved, a new submission timeline and submission method will be discussed on a case by case basis.

Students are strongly advised to contact the unit convenor as early as possible if there are any issues that will not make an on-time submission possible.

Exam:

The final exam will focus on content covered in the classes throughout the semester. Please see the assessments section for details on the final exam.

Website and access to unit material:

The web page and content for this unit can be found at iLearn: https://ilearn.mq.edu.au/login/MQ/. Note that the unit content is not publicly available and requires for you to log in to access.

What has changed from last year:

This year the assessments have been reworked and substantial new material added on Web

APIs, RESTful architecture and WOA, iPaaS, The Internet of Things and a new Microsfot 2019 vision tutorial.

Unit Schedule

Week	Topic	References
1	B2B E-Commerce Objectives Websphere Business Modeler Software Practical – Websphere Business Modeler Tutorial	Turban, Electronic Commerce, 2012 Silver, 2006 I BM Redbook, 2007
2	IBM BPM Workbench Modeling Software E-Procurement Processes E-Marketplaces Release Assignment One (Individual Assignment)	Gartner,IBM Ariba, Collaborative Commerce, 2010
3	Collaborative Commerce (ERP II) B2B Data Integration (EDI and EDI-INT) Release Assignment Three (Group Assignment) 'Hospital Supply Chain Management'	Gartner Coles Group Specifications Salient Retail Link, 2012
4	Introduction to Application Integration and B2Bi Web Services Introduction Assignment One Due Release Assignment Two (Individual Assignment)	Linthicum, 2004 Roshen, 2008 IBM, 2004 and 2009
5	Services Orientated Architecture Data Orientated Application Integration Tutorial: Minor Project 1	White, 2005 and 2009 IBM, 2004 Gartner, 2013
6	Application Integration - Application Interfaces - Application Servers Assignment Two Due Tutorial: Minor Project 2	Linthicum, 2004 Faber Novel, 2012 IBM, 2009 Gartner, 2012
7	Cloud Computing Processes in the Cloud Tutorial: Minor Project 3	Linthicum, 2009

8	Enterprise Systems Integration, Oracle Fusion (Guest Speaker)	Tanya Williams, 2014
	Integration Platform as a Service	Azeez, 2013
	Tutorial: Minor Project 4	
9	Business Process Reengineering	IBM, 2005
	Business Process Management	El Sawy, 2001
	Supply Chain Planning	VICS CPFR, 2012
	Tutorial: Minor Project 5	
10	Business Portals	Linthicum, 2004
	Business Process Management Systems	GEA, 2007
	Tutorial: Minor Project 6	Gartner, 2012
11	OmniChannel Marketing	JDA, 2012
	The Internet of Things	It Itzkovitch 2013
	Microsoft 2019 Vision Tutorial	Microsoft 2009
12	Group Presentations Assignment Three Due	
13	Group Presentations continued	
	Tutorial and Revision	

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/

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

- Be able to compare and contrast application integration technologies such as APIs, database integration, application servers and business process management systems.

- Understand and be able to describe the future of business to business integration with web services based SOA, API based WOA and intelligent business process management suites.
- Be able to describe the application of contemporary technologies in a recent successful B2Bi case study involving a one to many relationship.
- Confidence in leadership skills; communication skills; critical analysis skills; problem-solving skills and creative thinking skills.

Assessment tasks

- Assignment 1
- Assignment 2
- Group Assignment
- 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

- Be able to use process modelling software to describe, and derive appropriate metrics, for an 'As Is' process and proposed improved 'To Be' processes.
- Be able to compare and contrast application integration technologies such as APIs, database integration, application servers and business process management systems.
- Understand and be able to describe the future of business to business integration with web services based SOA, API based WOA and intelligent business process management suites.
- Be able to describe the application of contemporary technologies in a recent successful B2Bi case study involving a one to many relationship.
- Confidence in leadership skills; communication skills; critical analysis skills; problem-solving skills and creative thinking skills.

Assessment tasks

- Assignment 1
- Assignment 2

- Group Assignment
- 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 outcomes

- Understand and be able to describe the future of business to business integration with web services based SOA, API based WOA and intelligent business process management suites.
- Be able to describe the application of contemporary technologies in a recent successful B2Bi case study involving a one to many relationship.
- Confidence in leadership skills; communication skills; critical analysis skills; problem-solving skills and creative thinking skills.

Assessment tasks

- Assignment 2
- Group Assignment
- 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

- Be able to use process modelling software to describe, and derive appropriate metrics, for an 'As Is' process and proposed improved 'To Be' processes.
- Be able to compare and contrast application integration technologies such as APIs, database integration, application servers and business process management systems.
- Understand and be able to describe the future of business to business integration with web services based SOA, API based WOA and intelligent business process management suites.

- Be able to describe the application of contemporary technologies in a recent successful B2Bi case study involving a one to many relationship.
- Confidence in leadership skills; communication skills; critical analysis skills; problem-solving skills and creative thinking skills.

Assessment tasks

- Assignment 1
- Assignment 2
- Final Examination

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 outcomes

- Be able to describe the application of contemporary technologies in a recent successful B2Bi case study involving a one to many relationship.
- Confidence in leadership skills; communication skills; critical analysis skills; problem-solving skills and creative thinking skills.

Assessment tasks

- Group Assignment
- 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 outcomes

- Be able to use process modelling software to describe, and derive appropriate metrics, for an 'As Is' process and proposed improved 'To Be' processes.
- Be able to describe the application of contemporary technologies in a recent successful B2Bi case study involving a one to many relationship.

- Confidence in leadership skills; communication skills; critical analysis skills; problem-solving skills and creative thinking skills.

Assessment tasks

- Assignment 2
- Group Assignment
- Final Examination

Standards

Four standards, namely HD, D, CR, P summarize as many different levels of achievement. Each standard is precisely defined to help students know what kind of performance is expected to deserve a certain mark. The standards corresponding to the learning outcomes of this unit are given below:

HD	Apply techniques and knowledge in new contexts, show breadth and depth of understanding of business process modeling and its role in justifying investment in application integration technologies.	A sound grounding in designing application integration architectures, understanding the web services evolution to a Services Orientated Architecture and the role of Business Process Management.	Demonstrate leadership, creativity,critical thinking and analysis skills. Enthusiatic in acquring new knowledge in the application integration area. Demonstrate capability in applying new application integration knowledge to solve real-world problems. Conduct team work effectively and play a key role in moving the whole project team forward.
D	Apply techniques and knowledge in some new contexts, show breadth and depth of understanding of across most of the business process modeling topics and its role in justifying investment in application integration technologies.	Apply techniques and knowledge in some new contexts, show breadth and depth of understanding across most of the topics: designing application integration architectures, understanding the web services evolution to a Services Orientated Architecture and the role of Business Process Management.	Demonstrate some leadership occasionally. Show creativity, critical thinking and analysis skills. Have the capability in applying application integration knowledge to solve real-world problems. Collaborate with team members well and finish assigned tasks on time and with good quality.
CR	Show breadth of understanding across most of the business process modeling topics and its role in justifying investment in application integration technologies.	Show breadth of understanding across most of designing application integration architectures, understanding the web services evolution to a Services Orientated Architecture and the role of Business Process Management.	Demonstrate analysis skills in some occasions. Know how to apply application integration to solve some of the real-world problems. Able to finish assigned tasks on time and with good quality most of the time.
P	Can reproduce definitions and ideas, show some breadth of understanding othe business process modeling topics and its role in justifying investment in application integration technologies.	Can reproduce some defintions and ideas, show some breadth on issues in how breadth of understanding across most of designing application integration architectures, understanding the web services evolution to a Services Orientated Architecture and the role of Business Process Management.	Demonstrate limited analysis skills. Can apply application integration knowledge to solve limited real-world problems. Able to finish all assigned tasks on time and with acceptable quality.

Grading

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.

In this unit, 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 performed satisfactorily in the internal (assessment) components of the course.
- Have satisfactory performance in the final examination.

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 exam.

Department of Computing expectations are that students have to perform satisfactorily in the final exam 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).