Title (Units): **COMP7340 Enterprise Application Architecture and Integration (3,2,1)**

Course Aims: This course aims to cover key concepts and design principles related to enterprise application architecture and enterprise application integration. It first provides students a business strategic perspective on adopting enterprise architecture, and then includes topics like layering structure, business logic organization, patterns for object/relational access layers, model-view-control patterns for Web, message-based enterprise application integration, and recent advances in enterprise application architecture. After the completion of this course, the students should be able to explain the principles behind different enterprise patterns and apply them for enterprise application development.

Prerequisite: COMP 7320 Professional Methodologies for Information Systems

Course Intended Learning Outcomes (CILOs):
Upon successful completion of this course, students should be able to:

No.	Course Intended Learning Outcomes (CILOs)
	Knowledge
1	Explain the basics of enterprise architecture and the strategic perspectives behind
2	Describe the key design related issues and principles in enterprise application architecture
3	Explain how different design patterns for enterprise application architecture work
4	Explain how the message-based integration pattern can be applied to enterprise application integration
	Professional Skill
5	Apply different design patterns for enterprise applications development
	Attitude
6	Critique the importance of architectural design in enterprise application development

Calendar Description: This course aims to cover key concepts and design principles related to enterprise application architecture and enterprise application integration. It includes topics like layering structure, business logic organization, patterns for object/relational access layers, model-view-control patterns for Web, message-based enterprise application integration, and recent advances in enterprise application architecture.

Teaching and Learning Activities (TLAs):

CILOs	Type of TLA
1-4,6	Via lectures, students will learn key concepts and design principles in enterprise application architecture.
5	Via lab sessions and group projects, students gain hands-on exposure to the use of design patterns in enterprise application architecture.

Assessment:

No.	Assessment Methods	Weighting	CILOs to be addressed	Description of Assessment Tasks
1	Continuous assessment	40%	1-6	Continuous assessments via lab exercises and/or group projects are designed to measure how well the students have learned the key concepts and principles behind enterprise application architecture, and applied different design patterns to enterprise application development.
2	Examination	60%	1-4	Final examination questions are designed to see how far students have achieved their intended learning outcomes. Questions will be more the design consideration of enterprise application

				architecture to assess the students' ability in this field of study.

Assessment Rubrics:

Criteria	Excellent (A)	Good (B)	Satisfactory (C)	Fail (F)
Use different design patterns for enterprise application integration	Compare and contrast features of various design patterns for enterprise application integration; Identify appropriate occasions or contexts for their use.	Identify alternatives and select appropriate design patterns in some specific occasions and context.	Use some assigned design patterns to do architecture design.	Unable to apply design patterns to most of the occasions.
Describe the key design issues and principles -- indicating their purposes and interactions among them	Describe the features of key principles of enterprise application architecture design and various related design patterns in the context of enterprise application integration, and how they are related to the strategic development of an enterprise.	Describe the features of key principles of enterprise application architecture design and various related design patterns in the context of enterprise application integration.	Describe the features of key principles of enterprise application architecture design and some simple design patterns in the context of a simple information system.	Unable to clearly identify the purpose and general principle of enterprise application architecture design.

Course Content and CILOs Mapping:

Content		CILO No.
I	An Overview on Application Architecture	1
II	IT Alignment and Enterprise Architecture as Strategy	1
III	Enterprise Architecture Design Considerations and Related Design Patterns	2-3,5
IV	Enterprise Application Integration Via Messaging	4,5
V	Advanced Topics (e.g. SOA Design patterns)	3,4

References:

- J.W. Ross, P. Weill, D.C. Robertson. Enterprise Architecture as Strategy: Creating a Foundation for Business Execution, Harvard Business Press, 2006
- Martin Fowler. Patterns of Enterprise Application Architecture, Addison-Wesley Professional, 2002.
- Gregor Hohpe and Bobby Woolf. Enterprise Integration Patterns: Designing, Building, and Deploying Messaging Solutions, Addison-Wesley Professional, 2003.
- Robert Daigneau. Service Design Patterns: Fundamental Design Solutions for SOAP/WSDL and RESTful Web Services, Addison-Wesley Professional, 2011
- Amon Rotem-Gal-Oz. SOA Patterns, Manning Publications, 2012.
- Len Bass, Paul Clements and Rick Kazman. Software Architecture in Practice, 3rd Edition, Addison-Wesley Professional, 2012.

Course Content:

Topic

I. An Overview on Application Architecture

II. IT Alignment and Enterprise Architecture as Strategy

III. Enterprise Architecture Design Considerations and Related Design Patterns
   A. Dividing an enterprise application in layers
   B. Approaches for business logic organization
   C. Mapping between objects and relational databases
   D. Model-View-Controller and Web presentation
   E. Designing distributed object interfaces
   F. Examples of Design Patterns for Enterprise Applications

IV. Enterprise Application Integration Via Messaging

V. Advanced Topics (e.g. SOA Design patterns)