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IS 685-852: Enterprise Architecture and Integration

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Recommended Citation

New Jersey Institute of Technology
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Department of Informatics

IS 685-852: Enterprise Architecture and Integration (Online)
Online Delivery
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In-Person Office Hours: Friday 11:30 AM – 12:45 pm
Additional Online and In-person Office Hours by Appointment

Description

The Enterprise Architecture (EA) describes an organization's IT strategy and operational structure. IS and IT professionals utilize the EA to analyze, design and integrate the (often heterogeneous) IT infrastructure and applications to most effectively support the enterprise and respond to risks. Students learn to develop an EA analysis which reflects its business strategies, capabilities, processes, and systems, metrics, information resources, and networking infrastructure. This enables students to determine the impact of IT solutions, by learning to deconstruct, analyze and configure IT systems in alignment with enterprise-wide business strategies. The course covers the industry standard The Open Group Architecture Framework (TOGAF) enterprise architecture framework and focuses on Enterprise Application Integration (EAI).

Required Background

Prerequisites: None. Recommend completion of IS 663 or CS 673.

Overview:

An enterprise is a collection of organizations that share a common set of goals and objectives. An enterprise can be a business unit, an entire corporation, a government agency or a collection of businesses joined in a partnership. Each enterprise has requirements for the right technology, software engineering methods, and software architecture style to create a good IT and IS infrastructure.

In many cases this enterprise architecture is not optimal. For example, consider a bank that has consumer banking and mortgage banking divisions. A silo-approach to create local capabilities to manage customer and account information at the local level may be an acceptable approach for each division but not an optimal and possibly acceptable approach for customers who do business with both divisions and shareholders who own both divisions. A customer who does banking with both divisions most likely is not happy because he/she cannot get a consolidate view of his/her business with both divisions. For the bank (i.e. enterprise), the situation is also not ideal because it cannot leverage its investment on one division in the other division (e.g. overlapping and redundant and possibly conflicting capabilities). The same is true for governments where each agency has its own separate IT landscape. Recent increases in mergers and acquisitions have exacerbated these organizational challenges.

These example situations occur when divisional projects are not aligned with vision and strategy of the enterprise (i.e. bank and government). The enterprise architecture discipline was established to define a systematic approach for translating business vision and strategy into technical plans.

This course provides students with a theoretical and practical understanding of the subject areas related to enterprise architecture plus technical and business opportunities and industry trends. It also introduces an implementation methodology plus technologies essential to realization of enterprise architecture.

Course Objectives:

- Understand methods, terminology and trends in Enterprise Architecture (EA)
- Learning fundamental principles, industry frameworks, theories, and best practices in EA
- Learning to apply course material to real world situations through lecture, class discussion, group and individual projects, and studying real case studies
- Understanding the service oriented architecture model in detail

Key Topics Covered:

This class is designed to expand your IT skills with materials you need to know as an *enterprise architect*: Some of the key topics covered are:

1. What are enterprise architectures and their importance in the current business environment? We will discuss barriers, opportunities, risks for implementation of an enterprise architecture program and ways to overcome them. We will also discuss how to identify the scope of enterprise architecture to make sure it aligns with business strategy plus ways to identify business values from an enterprise architecture program.
2. You will learn how to recognize the need for enterprise architecture in an existing organization and ways to create a proposal for an enterprise architecture initiative.
3. You will learn an implementation methodology that you can use to initiate an enterprise architecture program.
4. You will learn "Service Oriented Architecture" and how to use it to design and implement enterprise applications.
5. You will learn three enterprise architecture frameworks and how and when to use them: Zachman Enterprise Architecture Framework, The Open Group Architecture Framework (TOGAF), Enterprise Architecture Cube methodology.
6. You will learn why governance and standards are as important to development of enterprise application and architecture as technical architecture is.
7. You will learn how to extend what you learned in the software engineering, software architecture, and project management courses to the enterprise application development and architecture domains.
8. You will learn why one enterprise architecture does not fit all.

Textbooks:
- Scott A. Bernard, *An Introduction to Enterprise Architecture*, Third Edition, AuthorHouse, 2012.   ISBN: 978-1-4772-5801-2. Electronic editions acceptable (978-1-4772-5801-9).

- Jeanne W. Ross, Peter Weill, and David Robertson *Enterprise Architecture as Strategy: Creating a Foundation for Business Execution,* Harvard Business School Press, 2006. (e-Book recommended)

- A set of readings will be posted in Moodle.

Academic Integrity

Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found here.

Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. *Any student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university.*

There will be no warnings or second chances with regard to cheating. It is your responsibility to understand specifically, what constitutes academic dishonesty. Ignorance is not an excuse or a defense. It is also your responsibility to understand the rules for properly citing the work of others in submission of classwork. Improper citation with a simple "copy/paste" from online sources may be grounds for failure of the assignment and/or the course.

If you have any questions about the code of Academic Integrity, please contact the Dean of Students Office at *dos@njit.edu*.

Learning Management System:

We shall be using the Moodle learning management system (LMS) for on-line discussions, assignment submissions, distribution of readings, announcements and other activities. Lecture recordings will be made available in Moodle prior to the week in which they are scheduled. It is your responsibility to check Moodle regularly for announcements and any changes to the schedule.

Regarding Groups and Collaborative Work

Class members come to IS 685 with a myriad of backgrounds, experiences and opinions. Everyone will benefit from everyone else's knowledge. The class is being structured so that groups are assigned randomly for group assignments and project work. This will maximize the opportunity for you to share your experiences with others and learn from one another. Please draw on your professional and previous academic experience throughout the course. There are several group assignments/projects where you will need to meet and coordinate with members of a group to complete assigned work. This may be done in a technology-mediated format.

Course Structure and Components:

1. A tentative weekly schedule of topics is included at the end of this syllabus. Any revisions will be announced in Moodle.
2. Weekly recorded lectures and lecture slides will be posted in Moodle by the week in which they are scheduled. You should review these and ask questions in the *Help and Open Discussion Forum*.
3. There are several Group Reading Assignments where a group of students is required to read one of the articles on the reading list and collectively produce a recorded PowerPoint slide set to summarize the assigned article. Several of the chapters in the Ross, Weill and Henderson textbook (*Enterprise Architecture as Strategy: Creating a Foundation for Business Execution)* will be covered in this same manner. For articles, the presentation should be no longer than 10 minutes; for the book chapters, the time limit is 30 minutes.   More information will be posted in Moodle. The Group Reading Assignments will account for 20% of the course final grade.
4. There will be a weekly Group Discussion Forum. Each Group Discussion Forum will have a

number of posted questions where students will be required to choose and answer one original question, and respond to at least two other questions with value-added comments. To avoid "information overload" the class is divided into groups of about 10 students for this weekly responsibility. The rubric for assessment is posted in Moodle. Cumulative participation in these weekly Group Discussion Forums will account for 20% of the course final grade.

5. There will be a midterm and cumulative final exam. Both will be administered online. You will need to install the Respondus Lockdown Browser on your computer. You must be available at the appointed hour for the midterm exam: Friday, March 13, 4:00-6:00 pm. The Final exam will be scheduled by the Registrar's Office during final's week. The midterm and final exam account for 40% (20 % each) of the final course grade.

6. A Final Group Project will demonstrate the ability to apply principles of enterprise architecture in a business setting. Further details will be provided in Moodle after the midterm exam. The Group Project will account for 20% of the course final grade.

Summary of Grading

Grading for IS 685 is tentatively assigned as follows:

1. Group Reading Assignments: (3)   20%
2. Group Discussion Forums: (weekly)   20%
3. Final Group Project: 20%
4. Online Midterm Exam   20%
5. Online Final Exam: 20%

Grading Scales:

There are two different grading scales used for the course as shown in following table:

SCALE #1: LETTER GRADE SCALE	SIGNIFICANCE	SCALE #2: PERCENTAGE SCALE	CALCULATION
A	Excellent	A	90% and above
B+	Good	B+	85% - 89%
B	Acceptable	B	80% - 84%
C+	Marginal Performance	C+	75% - 79%
C	Minimum Performance	C	65% - 74%
F	Failure	F	Below 65%

1. Grading components used will be announced with particular assignments.
2. The Moodle Gradebook does not handle mixed scales well. Therefore, the final average computed in the Moodle Gradebook may not be correct. However, the individual components will be accurately recorded.
3. Unexcused late assignment submissions may not be accepted, or accepted with penalty

Miscellaneous

- If you send me e-mail, please put IS 685 in the SUBJECT LINE so I can filter your e-mails to be read quickly (as opposed to them being ignored as junk e-mail).
- This semester's office hours are posted above. For other times, please message me and we can arrange a phone call or virtual meeting at a mutually convenient time (including evenings and weekends).
- If you do not get a response from me on an email message (with IS 685 in the subject line) within 24 hours, please feel free to email again.

Tentative – Spring 2020 Outline/Weekly Schedule – Subject to Minor Revision

Week	Topic	Group Reading Assignment
1 – Jan 20	A Review of Architecture vs. Infrastructure Case Study: Danforth Manufacturing Corp. (B: Case Study Introduction)	
2 – Jan 27	An Overview of Enterprise Architecture (B: Chapter 1) To Execute Your Strategy, First Build Your Foundation (RWR: Chapter 1)	
3 – Feb 3	The Structure and Culture of Enterprises (B: Chapter 2) Define Your Operating Model (RWR: Chapter 2)	
4 – Feb 10	The Value and Risk of Creating an Enterprise Architecture (B: Chapter 3) Implement the Operating Model via Enterprise Architecture (RWR: Chapter 3)	
5 – Feb 17	Implementation Methodology (B: Chapter 4)	RWR: Chap. 4: Navigate Stages of EA Maturity
6– Feb 24	Documentation Framework (B: Chapter 5)	RWR: Chap. 5: Cash In on the Learning
7 – Mar 2	Architecture Components and Artifacts (B: Chapter 6)	RWR: Chap. 6 Build the Foundation One Project at a Time
8 – Mar 9	Midterm Exam – Friday, March 13, 4:00 pm – 6:00 pm	
Mar 16	*Spring Break*	
9 – Mar 23	Developing Current and Future Architecture Views (B: Chapters 7 and 8)	RWR: Chap 7: Use EA to Guide Outsourcing
10 – Mar 30	Developing an EA Management Plan (B: Chapter 9)	RWR Chap 8: Now Exploit Your Foundation for Profitable Growth
11 - Apr 6	Using an Enterprise Architecture (B: Chapter 10, 11, 12) Monday, April 6: Last Day to Withdraw and Receive grade of "W" Friday, April 10 – Good Friday, – University Closed	RWR Chapter 9: Take Charge! The Leadership Agenda
12 – Apr 13	Future Trends in Enterprise Architecture (B: Chapter 13)	
13 – Apr 20	*** To Be Announced ***	Group Reading Assignments – Readings will be posted in Moodle
14 – Apr 27	*** To Be Announced ***	Group Reading Assignments – Readings will be posted in Moodle
15 – May 8-14	Final Exam – Date To Be Scheduled by Registrar's Office	

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