Foundations of Enterprise Architecture
Syllabus and Course Information

1. **Credit**: This is a 5-credit course.

2. **Prerequisites**: This course is open to all students in the Masters in Computer Science and Systems program. There are no specific prerequisites for this course.

3. **Catalog Description**: Covers foundational aspects of both enterprise and architectural thinking, including the software to technology to solution architecture continuum, role of EA in business and IT alignment, architectural styles and techniques for capturing and documenting architectures. Techniques for analyzing and reasoning about architectures are practiced in assignments in class.

4. **Course Details**: Information Technology has become an integral part of successful business strategy. Enterprise architecture (EA) is fast emerging as a key function that enables synergy between IT and business strategy and delivery. EA is the next step in the learning of young professionals who have a strong background in algorithms, software engineering practices and database, networking and other software development technologies. Foundations of EA applies these learning’s and introduces solution architecture, technology architecture and business architecture skills. This is the first of two courses for building EA skills. The course will focus on
   - Evolution of enterprise architecture concepts – the business, technology and strategy perspectives.
   - Architectural styles and their role in meeting architectural requirements
   - Business architecture and capabilities models
   - Project work to practice the concepts and use of tool to build architecture

The following course “Advanced Enterprise Architecture” focuses on strategy development, use of standard frameworks (TOGAF, Zachman) for EA and experiential learning through case study and project.

5. **Learning Goals**: Upon successful completion of this course, the student will be able to:

   1. Understand the architecture continuum and the relation between software, applications, technology and solution architectures
   2. Explain the role of information technology in shaping and delivering business goals and strategies
   3. Understand architectural styles and patterns used in solution development and use these in projects
   4. Understand the concepts and components of business architecture.
   5. Use a diagramming tool to develop architectural viewpoints
   6. Understand and use quality attributes for analyzing and reasoning about architectures
   7. Understand the role of enterprise architecture and the path to building enterprise level architecture models
   8. Effectively participate in a team effort to build architecture for software intensive systems
6. Textbook:

- **Reference Textbooks:**
  1. An Introduction to Enterprise Architecture: Third Edition, Scott A. Bernard, AuthorHouse

- **Additional Resources:**
  Videos and papers will be provided in-class
- **Other Readings:** Selected conferences papers and chapters from other books will be assigned for reading. These will be available online.

7. Grading:

- **Homeworks (30%)** – There will be reading assignment (20%) and a tool based modeling assignment (10%)
- **Term Project (40%)** – Each student will be expected to complete a term project, as a form of problem-based learning in which the student acquires skills and understand their importance in a real context. The project will follow the learning of topics in the class – identifying the business architecture, defining the project statement, building the solution architecture and delivering the final architecture for the project. The oral and written deliverables for the project include a business capabilities matrix, quality attributes and scenarios, evaluation for styles, models for the architecture and a final presentation.

- **Midterm (10%) and Final exam (20%)**

Students need to have a passing grade on the assignments and project (combined) as well as a passing grade on the tests (combined) to pass the class.
8. Schedule:

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<thead>
<tr>
<th>Week</th>
<th>High level Topic</th>
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<tbody>
<tr>
<td>Week 1</td>
<td>Introduction and evolution – from coding to design and architecture. Types of, and relation between architectures</td>
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<tr>
<td>Week 2</td>
<td>The Software architecture to technology architecture continuum. Systems thinking and business thinking</td>
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<td>Week 3</td>
<td>Solution and Enterprise Architecture - business and IT strategies</td>
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<td>Week 4</td>
<td>Capturing architectures – use of models. Architectural styles</td>
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<td>Week 5</td>
<td>Documenting architectures</td>
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<td>Week 6</td>
<td>Quality attributes – the key focus of architectures</td>
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<td>Week 7</td>
<td>Overview of EA frameworks and practices</td>
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<td>Week 8</td>
<td>Capturing enterprise application and data architectures</td>
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<td>Week 9</td>
<td>The human side of architecting – Skills to be an effective architect</td>
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<tr>
<td>Week 10</td>
<td>Project presentations, Architecture in the SDLC</td>
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