

# CSC 9010 Service Oriented Architecture Design and Analysis

## Spring 2008

### Course Objectives & Learning Outcomes

**Objective 1:** Survey the topic of Service Oriented Architecture (SOA), including related aspects of computer science, engineering and business, and how these all relate within the larger topic of Software Engineering.

- Students will demonstrate an understanding of the topic of SOA within the larger context of Software Engineering, including service providers, service brokers, service requestors, and the approaches, goals, benefits and methodologies for successfully implementing, adopting and deploying SOA.
- Students will demonstrate an understanding of the business and technical challenges inherent in SOA, including issues of cooperation, competition, governance and interoperability.

**Objective 2:** Provide experience developing SOA applications either individually or as part of a team.

- Students will be able to implement a SOA application, including a service provider and service requestor.
- Student will demonstrate an understanding of the business and technical challenges inherent in SOA by addressing issues of competition and cooperation by designing an interoperable SOA application as part of an individual or team design project.
- Students will successfully apply SOA design principles and practices by implementing an interoperable SOA application as part of an individual or team design project.

**Objective 3:** Learn about modeling and simulation of Service Oriented Architecture, and gain experience using current modeling and simulation software.

- Students will be able to create a model and simulation of a SOA application using one or more current academic or professional modeling and simulation software tools.
- Students will demonstrate an understanding of the business and technical challenges inherent in SOA by addressing issues communication, service brokering, service providing, service requesting, and other technical issues of SOA by creating a model and simulation of a SOA application.

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**Texts:**

- Thomas Erl, *Service-Oriented Architecture (SOA): Concepts, Technology, and Design* Prentice-Hall, 2005, ISBN-10: 0-13-185858-0, ISBN-13: 978-0-13-185858-9
- Mark D. Hansen, *SOA Using Java Web Services* Prentice-Hall, 2007, ISBN-10: 0-13-044968-7, ISBN-13: 978-0-13044968-9

**Evaluation:**

- 60% Homeworks and Projects
- 40% Class Presentations and Participation

**Topics:**

- SOA Concepts: service provider, service consumer, service discovery
- SOA Benefits: interoperability, agility, cost
- SOA Challenges: dynamic discovery, security, uniform standards, performance, service guarantees, governance, service composition, service granularity
- SOA Technology/Approaches: BPEL, ESB, WSDL, UDDI, XML, Web Services, REST, HTTP
- SOA Modeling: CPN, OPNET

**Policies:**

- See CS Department academic integrity policy at <http://csc.villanova.edu/academics/academicIntegrityPolicy>.
- See University academic integrity code at <http://www.vpaa.villanova.edu/academicintegrity/code.html>.
- See University academic integrity policy at <http://www.vpaa.villanova.edu/academicintegrity/policy.html>.