Intra- and inter-enterprise integration of heterogeneous systems is often a tedious and error-prone task. However, the advent of new technologies such as services-oriented computing and an increase in attention from the research community may potentially revolutionize this multi-billion dollar industry.

In this course, we will explore the conceptual foundations, techniques, standards and systems that are relevant to enterprise integration. The course is divided into three sections. Some of the topics that we will explore in each section are:

I Representation and Modeling
1. Principles of Services-Oriented Computing – intra- and inter-enterprise integration, SOC architectures, service composition
2. Interoperation – declarative and procedural representations, knowledge representations, common ontologies
3. Process specifications – workflow dynamics and interoperability, UML, algebras
4. Agents – environments, planning-based composition, multiagent systems

II Standards
5. Web services – Web service description language (WSDL), directory services (UDDI)
6. Coordination with Web services – WS choreography (WSCI), WS-Coordination
7. Ontology languages – Web ontology language (OWL)
8. Business process execution language (WS-BPEL)

III Frameworks
9. Enterprise architectures – J2EE, .NET, model-driven
10. Interaction architectures – Messaging, CORBA, P2P, Grid computing

The coursework will include teaching, assignments, one midterm exam, and presentations of research papers in the above mentioned and related topics. Each student will also be required to function as a scribe at least once during others’ presentations. In the latter part of the course, students will be required to complete group projects. The projects will involve implementing prototypical systems that compare and contrast existing algorithms, well-written and researched survey papers, and research papers on new topics. The projects will be selected keeping the students’ interests in mind.

Students will be graded in part on their performance on the assignments and the exam, understanding of the allocated research papers, quality of the presentations, attendance, and their enthusiasm in presenting and participating in the course. The quality of the completed projects will decide the remaining part of the grade.

There are no pre-requisites for this course. Students that are uncertain about the benefits of this course should consult the instructor prior to registering for the course.

For questions and clarifications, please contact the instructor at pdoshi@cs.uga.edu.