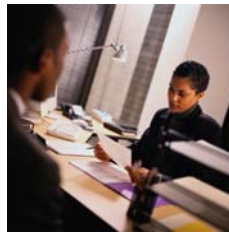


service; (**sur'vis**) noun, adjective, and verb,

- “A change in condition or state of an economic entity (or thing) caused by another” (Hill, 1977)
- “Intangible and perishable... created and used simultaneously” (Sasser et al, 1978)
- “Characterized by its nature (type of action and recipient), relationship with customer (type of delivery and relationship), decisions (customization and judgment), economics (demand and capacity), mode of delivery (customer location and nature of physical or virtual space)” (Lovelock, 1983)
- “All economic activity whose output is not physical product or construction” (Brian et al, 1987)
- “Deeds, processes, performances” (Zeithaml & Bitner, 1996)
- “An activity or series of activities... provided as solution to customer problems” (Gronroos, 2000)
- “A time-perishable, intangible experience performed for a customer acting in the role of co-producer” (Fitzsimmons, 2001)

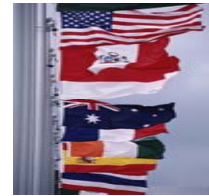
service system

- “A value coproduction configuration of people, technology, internal and external service systems connected via value propositions, and shared information” (Wikipedia, 2008)



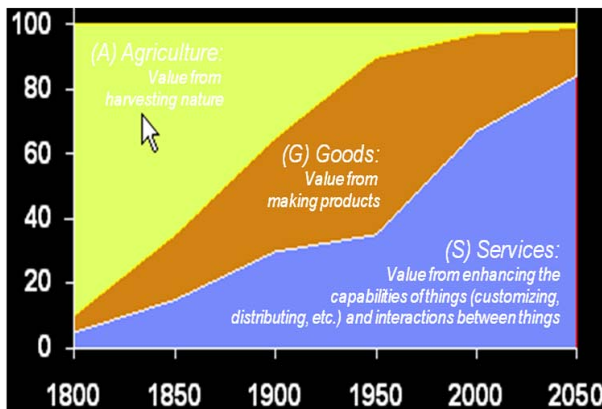
Service Systems Engineering Skills would be desirable at companies like

- UPS
- IBM
- Cisco
- Disneyland
- Google
- Oracle
- HP
- EBay



.....just to name a few
as well as product dependent organizations – manufacturing sector.

US Employment History & Trends



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Updated July 28, 2009



**Master of Science
 In Industrial & Systems Engineering**

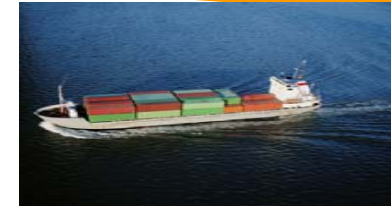
**Service
 Systems
 Engineering**
 with
**Black-Belt in Service Quality
 Option**



The MSISE Service Systems Engineering specialization prepares graduates to design, develop, implement and manage optimize internal and external service systems that enable enterprises to deliver competitive products and services to the global market.

MS Industrial & Systems Engineering

Specialty Area: Service Systems Engineering



Service Systems Engineering

As the world's economies continue to move toward the creation and delivery of more and better services, new academic curricula are needed that include the necessary engineering information technology and business skills that these global services depend on to best prepare tomorrow's leaders. Today, nearly 80% of the US and other leading economies are produced by the services sector.

The scale and depth of the impact of services in the world of business is reaching astounding proportions; one need only consider elements of the service sector that include, for example, transportation, healthcare, government, finance and banking, education, travel, entertainment, hospitality, human resources, support and repairs, all forms of e-business and many others. In addition, the globalization of these service businesses requires clear perspectives of the values, service levels, and scalability features that will guarantee these enterprises sustainable growth while meeting quality objectives. The traditional manufacturing sector faces the same challenges. Companies that develop and manufacture products have to continuously improve their value chain by optimizing and transforming their business processes to be more agile, cost competitive and customer-focused.

This 31 credit curriculum is a blend of techniques and technologies that will prepare students to contribute and excel in this challenging environment. It combines topics from Software Engineering, Operations Engineering and Business that will enable graduates to be knowledgeable and effective participants in a wide range of services sector enterprises.

In addition, the curriculum draws on the ISE Department's **Systems Engineering** curriculum to prepare students for a wide range of Operations Engineering challenges related to business re-engineering, supply chain, service quality, efficiency, effectiveness, and change. A course offered by the College of Business will focus on strategies for service innovation. A culminating project or written exam option is available to complete the requirements.

The Software Systems

specialization focuses on emerging technologies that form a software development and execution platform. Web Services, Service Oriented Architecture (SOA), and Enterprise Service Bus (ESB) are the technologies currently being developed and deployed to support the widespread delivery of fine-grained services via the Internet. This specialization also heavily leverages tools to expedite the development process.

The Six Sigma Black Belt in Service Quality

specialization provides training in a set of structured methodologies, problem solving tools, and advanced statistical methods for analyzing and improving processes and services on a broad range of metrics, especially cost, quality, and time variability. It moves beyond treating symptoms and short-term problems to the elimination of root causes, thereby emphasizing lasting improvement.



Prerequisites (for most majors)

ISE 130	Engineering Probability and Statistics or Equivalent (not for graduate credit)	
ISE 140	Operations Planning and Control or Equivalent (not for graduate credit)	
ISE 167	System Simulation, or Equivalent	3

Course Requirement

Three Core Courses Plus Exam or Project / Thesis

ISE 200	Financial Methods for Engineers	3
ISE 230	Advanced Operations Research	3
ISE 235*	Quality Assurance and Reliability	3
ISE 298	M.S. Project or Comprehensive Exam OR ISE 299 M.S. Thesis	1

Four Specialty Courses

Two required courses:

ISE 242	Advanced Service Systems Engineering and Management	3
BUS 297D	Special Topics in Business Admin Strategies For Service Innovation	3

Two out of the following four courses:

ISE 222	Advanced System Engineering	6
ISE 250*	Organizational Improvement Capabilities and Skills	
ISE 265	Advanced System Simulation	
ISE 270 +	Information Engineering	

Electives: Two ISE elective courses from the following list: 6
ISE 202*, ISE 251*, ISE 245, or ISE 247

TOTAL 31

*Note: ISE 202, 235,250, 251 also fulfill the course requirements for the Six Sigma Black Belt in Service Quality

+SJSU Technical-Writing Requirements: Take ISE 270 or ISE 212 after completing ISE 210 or other courses approved by the graduate advisors

For more information on Service Systems Engineering go to:
<http://www.research.ibm.com/ssme/>