

UC Irvine Extension

Software Architect Certificate Program

PROGRAM OBJECTIVES

The Software Architect Certificate Program helps software application developers gain the knowledge and skills needed to design the architecture of complete software solutions. While applications developers or programmers tend to be more concerned with the functionality of individual components, software architects need to understand the business purpose and desired outcomes of a software project from a global perspective, and be able to define how the various components (or objects) fit together.

PROGRAM NEED

In today's global workplace, many software development tasks including design and coding are being done in remote locations, often overseas. Software architecture, however, must be done close to home because the architect must work closely with domestic stakeholders in defining and designing the overall functionality of a software solution ensuring that it meets the company's business needs. Once the architect determines the layout of a software project's components, developers working outside the main office can carry out the task of building those components.

Applications developers who wish to advance in their career and ensure that they have skills companies will need in the future should consider the Software Architect Certificate Program.

This program features a systems approach to software development and includes such topics as business systems modeling, determining user requirements, evaluating business processes, employing good project management techniques, and developing a sound architecture for maximum flexibility and scalability. The program ends with a practical course in which students develop the architecture of a large-scale software solution from the beginning.

CERTIFICATE REQUIREMENTS

In order to receive the Software Architect Certificate, students must complete 11 units of required courses and a minimum of 4 units of elective courses (see Table 1) with a grade of "C" or better in each course.

COURSE DESCRIPTIONS

Required Courses

Developing Software System Models and Performing Tradeoff Analyses

I&CSCI X472.05 (2.0 Units)

This course provides an overview of fundamental systems concepts and modeling techniques with a focus on software development. Students learn how to develop models that they can use to evaluate alternative implementations of software solutions with the goal of determining the best design for specified requirements. Students will also become familiar with common architectural modeling and diagramming methods as well as quality factors and attributes associated with architectural design.

Foundations of Systems Analysis

I&CSCI X429 (3.0 Units)

This course provides an overview of systems analysis with an emphasis on the systems approach in developing computer solutions to meet the business needs of an organization. Topics include the design life cycle, performing requirements analyses, integrating separate parts into a system, and understanding how technology solutions support business activities. The course emphasizes examples and case studies focusing on the design, development, and deployment of business solutions employing computer systems.

Documenting and Analyzing User Requirements

MGMT X481.3 (3.0 Units)

This course focuses on the analysis and documentation of requirements and the role of the business analyst. Topics include: capturing requirements in a business requirements document; project vision and scope; identifying users; types of requirements; elicitation techniques (context diagram, concept of operations etc); structuring end user requirements; and documenting user requirements.

Software Architecture Project

I&CSCI X472.06 (3.0 Units)

This capstone course allows students to practice using a wide cross-section of the techniques and concepts they have learned in the program.

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Students will implement a systems-oriented project under the instructor's guidance from start to finish.

Elective Courses

Project Management of Information Technology MGMT X474.8 (2.0 Units)

Managing an IT project in an enterprise poses unique challenges. This course focuses on those elements of project management that are of greatest interest to IT workers. Topics include requirements definition and use-case analysis, performance metrics, risk determination and mitigation, task identification, scheduling, verification and testing, and version control. One of the goals of the course is to help IT staff members work more productively with business analysts, who frequently initiate IT projects.

System Performance Modeling I&CSCI X429.02 (2.5 Units)

Learn the fundamental techniques of system modeling and performance evaluation. This course

reviews fundamental concepts including queuing theory and Markov chains, and explores the application of these techniques to computer networking and architecture. The course also includes a survey of metrics and computational techniques for the analysis and assessment of system performance.

Managing Business Improvement Projects MGMT X474.10 (2.5 Units)

Business Process Improvement (BPI) is the structured methodology that leads to incremental process improvements within the context of Continuous Process Improvement (CPI). BPI can be performed within all levels of the organization and, along with technical skills, will also always be associated with the application of the soft skills necessary to effectively implement and institutionalize change. Through a series of training activities, you will learn how to select, design, sell, implement, and institutionalize the changes necessary for effective Business Process Improvement.

Table 1: List of courses in the Software Architect Certificate Program. Quarterly schedule subject to change.

Catalog No.	Course Title	Units	2005			
			Wi	Sp	Su	Fa
<i>Required Courses (11 Units)</i>						
I&CSCI X472.05	Developing Software System Models and Performing Tradeoff Analyses	2.0	•		•	
I&CSCI X429	Foundations of Systems Analysis	3.0		•		•
MGMT X481.3	Documenting and Analyzing User Requirements	3.0		•		•
I&CSCI X472.06	Software Architecture Project	3.0	•('06)			
<i>Elective Courses (Take at least two courses)</i>						
MGMT X474.8	Project Management of Information Technology	2.0		•		•
I&CSCI X429.02	System Performance Modeling	2.5		•('06)		•
MGMT X474.10	Managing Business Process Improvement Projects	2.5	online	online	•	

UNIVERSITY OF CALIFORNIA, IRVINE
UNIVERSITY EXTENSION

APPLICATION FOR CANDIDACY
Software Architect Certificate Program

This form must be submitted, along with a filing fee of \$125, prior to completion of the third course in the Program.

NAME Mr. Mrs. Ms.

HOME ADDRESS

CITY

STATE

ZIP

PHONE: DAY

EVENING

SOCIAL SECURITY NUMBER

JOB TITLE

EMPLOYER

EMPLOYER ADDRESS

Payment must be included with application.

MY CHECK FOR \$125 IS ENCLOSED (Payable to Regents of University of California).
CANDIDACY FEE IS NONREFUNDABLE AND NONTRANSFERABLE.

CHARGE TO: VISA MASTERCARD AMERICAN EXPRESS

ACCOUNT NUMBER

EXP DATE

AUTHORIZED SIGNATURE

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