

# INTRODUCTION TO SYSTEMS ENGINEERING FOR ADVANCED TRANSPORTATION

## DESCRIPTION:

This course is part of the core Intelligent Transportation Systems (ITS) curriculum established by the ITS Professional Capacity Building (PCB) program. For more information on the core curriculum, go to URL: [www.pcb.its.dot.gov/Catalogs/ITSCurriculum.htm#section2](http://www.pcb.its.dot.gov/Catalogs/ITSCurriculum.htm#section2).

This course is an introduction to systems engineering for ITS project managers and project staff. It provides a high-level view of a broad and rich topic area, introducing basic concepts to individuals who are working on ITS projects. The goal is to allow these individuals to understand the benefits of applying systems engineering approaches as a means of developing quality systems. The course covers technical practices such as modeling, prototyping, trade-off analysis and testing, and management practices such as risk assessment and mitigation, which make up "best practices" in the systems engineering arena. A combination of lecture and classroom exercises, with transportation systems examples, are used to illustrate the basic concepts and to introduce the topics to students.

## OBJECTIVES:

Upon completion of the course, participants will be able to:

- Define Systems Engineering and its application to ITS.
- Describe the system's life cycle and its relationship to systems engineering.
- Develop, derive, and validate requirements for a system.
- List the systems engineering tools available to mitigate risk.
- Define and apply the concept of earned value as a tracking mechanism.
- List three alternative strategies that may be applied to decision making under uncertainty.
- Identify where to find appropriate standards for developing ITS projects.
- Identify resources that may help project personnel to look at systems as a whole.

## TARGET AUDIENCE:

Transportation engineers and other practicing ITS professionals or technical persons at all levels of government and in the private sector. ITS project managers, technical team members, contractors, and staff are all appropriate participants. Project managers would particularly benefit from this course since they direct many peoples' efforts. Any level of professionals involved in ITS may attend to broaden their understanding of complex systems, beyond current technical knowledge.

## INSTRUCTORS:

**Les Jacobson, P.E.** brings 26 years experience in Intelligent Transportation Systems, including 20 years at the Washington State Department of Transportation where he was responsible for implementing, operating and maintaining the regional freeway ITS systems – one of the pioneering ITS implementations in the US. He earned his BS degree in Civil Engineering from the University of Washington and his MS from UC Berkeley. He is currently the manager of West Coast Systems for PB Farradyne. He is involved in a wide variety of ITS projects including ITS policy, planning, standards, development, deployment, software development and operations activities. Recent projects include deployment of the regional 511 system in the San Francisco Bay Area, and the central traffic signal control system for the City of San Francisco.

**Erin Ehlinger, P.E.** brings 23 years experience in Intelligent Transportation Systems. She earned her BS in Civil Engineering from the University of Washington and her MS from Northwestern University. Her project work focuses on ITS operations and maintenance, and systems engineering and planning for the deployment of ITS systems. Recent project work includes ITS architecture, staffing, operations processes and manuals, budgeting, and overall business planning. Her expertise extends from conventional transportation infrastructure to ITS infrastructure planning, design and construction, including advanced traffic management systems (ATMS), advanced traveler information systems (ATIS), communications trunk and interconnected traffic signal systems. She is considered a national expert in the area of ITS and software procurement and implementing the National ITS Architecture.

### Registration Procedure

- 1) Please contact Gail Ikeda at 956-8367, 956-8851 (FAX) or [gail@eng.hawaii.edu](mailto:gail@eng.hawaii.edu) by **Friday, September 2, 2005**
- 2) Attendance is limited to 30 participants, and preference is given to local government employees.

### Cancellations

Please contact us if you must cancel your registration or if someone will be substituting for you.

### Parking

Limited parking will be available at Restaurant Row. The "early bird" special parking rate at Restaurant Row is \$7/day. To receive the special parking rate you must enter the parking lot between 6:00am-9:00am and park on the 5<sup>th</sup> floor. You must have the parking attendant on the 5<sup>th</sup> floor stamp your parking ticket. There are no in and out privileges for the "early bird" special.

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**September 21-22, 2005**

Federal Building  
Room 5204  
300 Ala Moana Blvd.  
8:00 a.m. – 4:30 p.m.

Workshop sponsored by the

**Federal Highway Administration  
and the  
Hawaii Local Technical Assistance  
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in cooperation with the  
*Hawaii State Department of Transportation  
University of Hawaii's Department of Civil Engineering*

### **Hawaii Local Technical Assistance Program**

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