

A CUSTOMIZED PROGRAM FOR YOUR COMPANY



**CALTECH**

# Project Management Certificate Program

Bring our customized Project Management Certificate Program to your company to improve project performance.

Earn Professional Development Units (PDUs) or Continuing Education Units (CEUs)

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Caltech Industrial Relations Center is a recognized global provider registered with the Project Management Institute Registered Educational Provider Program (PMI® R.E.P.).

CALIFORNIA INSTITUTE OF TECHNOLOGY INDUSTRIAL RELATIONS CENTER



## Bring Project Management Courses to Your Company

Caltech, a leader in research and technological innovation, offers a customized project management program for your company.

**You and your project team will gain hands-on, practical skills to manage projects within demanding schedules and under significant cost constraints.** You will learn how to consistently achieve project deliverables on time and within budget.

**Our approach to project management education offers proven, results-focused courses delivered by industry-experienced project managers.** Certificate programs are available for individual companies to address specific project management staff development initiatives. In order to receive a Caltech Industrial Relations Center Project Management Certificate, participants complete a minimum of five courses from the wide selection of core and elective courses offered by the Center. We encourage each company to customize a project management certificate based on the company's own project management processes and needs.

Curriculum specialists from the Center will work with your training staff and/or subject experts to develop the best skills development approach for your organization.

**Caltech Industrial Relations Center is a recognized global provider registered with the PMI Registered Education Provider Program (PMI® R.E.P.).** Caltech Industrial Relations Center accepts and adheres to all PMI R.E.P. Program policies, requirements and rules concerning the provision of professional education activities and materials.

Participants will earn 16 Professional Development Units (PDUs) for each two-day session attended. These PDUs may be applied by PMI Project Management Professionals (PMP®) toward maintenance of their certification under the PMI Continuing Certification Requirements Program. Participants will also earn 1.6 Continuing Education Units (CEUs) upon completion of each course.

All courses taken as part of the Caltech Project Management Certificate Program will count toward qualifying you to take the PMP examination.

### Call Us To Increase Your Team's Project Skills



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# Core Courses

**Caltech's core courses provide critical project management skills needed throughout the life cycle of a project. We recommend progressing sequentially through these courses to build a solid foundation in project management. Courses can be customized to build in your company practices.**

### Course 1: Project Initiation, Costing, and Selection

*Project Initiation, Costing, and Selection* teaches you how to develop essential elements required to initiate a project, including the business case and the project charter. The course shows you how to use selection criteria and models to evaluate project economic returns and the project portfolio. You'll practice using different estimating techniques that are appropriate for specific phases of the project life cycle.

#### Upon completion of this two-day course, you will be able to:

- Establish the business case
- Develop the needs analysis and the project charter initiating the project
- Understand how estimated project costs and risks impact the decision on whether or not to approve a project
- Apply cost estimation techniques for each phase of the project
- Understand the basic concepts of present value analysis and Life Cycle Costing (LCC)
- Utilize project selection models, both numeric and qualitative, to evaluate the project portfolio

### Course 2: Project Organization and Leadership

As a project manager, your ability to skillfully conduct projects within a matrix-type organization is critical. You must be able to demonstrate responsibility and provide leadership, motivational skills, and conflict resolution on a continuous basis. By attending this course, project managers and the project management team will learn how to move ahead when conflicting business needs arise.

#### This two-day course shows you how to:

- Identify the project manager's key roles and responsibilities
- Survive and thrive in a matrix organization
- Build and manage effective cross-functional project teams
- Build key leadership competencies and skills
- Resolve conflicts within the team and with other constituencies
- Avoid pitfalls that cause projects to fail

# Elective Courses

## Course 3: Detailed Project Planning

*Detailed Project Planning* takes you through the key elements of project planning and integration. The project elements include the relationship of plans to corporate business goals, project objectives and constraints, and project scope. By working through a detailed Work Breakdown Structure (WBS), you'll learn how to effectively plan, integrate, and accomplish tasks.

You will also review the key tools of project time planning, such as Program Evaluation and Review Technique (PERT) and the Critical Path Method (CPM). Additional tools you will learn to use include precedence analysis, activity duration estimating, cost planning techniques, and other project plan elements.

### Benefits of attending this two-day course include gaining the ability to:

- Define project objectives and develop detailed project plans based on the project charter and Statement of Work (SOW)
- Break large or complex efforts into manageable assignments, including the proper use of Work Breakdown Structures (WBS)
- Use planning and scheduling work tools, including PERT and CPM techniques
- Understand cost planning and estimating elements and contract management processes essential to complete project planning
- Integrate project scope, time, cost, and resources plans

## Course 4: Project Monitoring and Control

As a project manager, you must be able to measure the status of the project and resources consumed. Equally important is your ability to compare measurements to projections and standards and utilize this information for diagnosis and re-planning. *Project Monitoring and Control* will help you analyze your monitoring and control data so you can begin corrective action before it's too late.

### Attending this two-day course will enable you to:

- Understand trending and forecasting in a project environment
- Monitor project progress and problems, utilizing data identification and collection techniques, and measurement and analysis tools such as earned value
- Exercise project control over resources, time, cost, and risk
- Report project performance and results in an effective way to project stakeholders
- Manage changes and re-plan work when necessary

## Course 5: Project Risk Management

Given all of the uncertainties associated with projects, your ability to manage the many different types of risk is critical to the project's success. Attend *Project Risk Management* to recognize the different types of risk you will encounter and how to appropriately respond to that risk. You will participate in classroom simulations and interactive exercises in this course.

### Attend this two-day course to learn how to:

- Identify what can go wrong on a project
- Determine what risks are important and warrant mitigation
- Prepare an effective risk statement
- Generate strategies to deal with critical risks
- Determine the expected value of a mitigation strategy
- Determine the size of the contingency reserve for the project
- Make decisions under uncertainty and risk

**Our elective courses help develop specialized project management skills. Include elective courses to meet your company's specific goals.**

### Detailed Cost Estimating

*Detailed Cost Estimating* helps you gain an in-depth understanding of the seven cost estimating methods and the three key types of estimation with detailed examples used from various industries. You will learn the essential aspects of managing the cost estimation process. Emerging factors in cost estimation are also discussed.

### In this two-day course you will learn:

- The cost estimating problem areas
- The major types and methods of cost estimating that must be understood by the project manager
- The key elements in managing the cost estimating process, such as organizational structure, the contingency algorithm, the cost of a cost estimate, and the cost/accuracy trade-off
- Emerging factors that the project manager must consider including software intensive projects, regulatory issues, short resources, and competitive challenges

### Earned Value Project Management

As a project manager or key member of the project team, you must be able to provide data indicating work progress; properly relate cost, schedule, and technical accomplishments; and supply management with information at a practical level of summarization. *Earned Value Project Management* provides you with the 'early warning' signals allowing you to predict additional funding necessary to complete the job based on your cost and schedule performance against the project plan.

### Attending this two-day course will enable you to:

- Define work using a Work Breakdown Structure (WBS) into time-phased task plans and work packages
- Plan, schedule, and budget authorized work in a formal, complete, and consistent way using earned value data elements
- Identify Work Package (WP) status with earned value calculated at the WP level
- Relate planned value and actual costs to earned value to obtain cost and schedule variances
- Evaluate variances, which result from comparison of the basic data elements to identify and resolve problems
- Evaluate past and current data to forecast future performance

## High-Performance Team Development

You will learn how to facilitate development of a high-performance team in this course. You will be able to establish and maintain a collaborative climate for team performance. This course includes determining how to identify and deploy the strengths and skills of individual team members.

### Attending this two-day course will enable you to:

- Assess team progress/performance and optimize results for customers and stakeholders
- Establish and maintain a collaborative climate for team performance
- Identify and deploy team member strengths and skills and enhance the rewards of team membership
- Plan and conduct effective team meetings
- Prepare for the special challenges of the virtual team

## Managing Multiple Projects

Many project managers are responsible for multiple projects. These projects are often in parallel but at different stages of development. *Managing Multiple Projects* shows you how to use special methodologies and management techniques for successful completion of your projects.

### Attend this two-day course to learn about:

- Project classification and prioritization
- Aligning project strategy and objectives in multi-project environments
- Organization analysis
- Constructing a project portfolio
- Elements for weighting and prioritizing projects
- Control techniques for multiple project conduct
- Managing for results

## Managing the Software Component of Projects

As a project manager in a technical organization, your projects typically include a software component. Both IT and non-IT project managers need the skills to successfully deliver the complete product that includes the software. You will learn how to recognize and address the signals of scope creep, running over budget, and comprised functionality at an early stage.

Attend *Managing the Software Component of Projects* to gain the tools and skills you need to better manage the software aspect of your project.

### Benefits of attending this course include improving your ability to:

- Manage software development in a project context
- Plan for software intensive projects
- Use appropriate estimating methods
- Understand the software development process and life cycle
- Measure and track technical, schedule, and cost performance
- Evaluate internal development versus procurement of software applications

## Project Management Tools

Participate in this hands-on workshop to improve your skills to optimize the project management tool your company uses (MS Project 2000, PS8, or Primavera). Other specialized tools (examples: @Risk, In.vision, Oracle, or SAP) will also be discussed.

### Attend this hands-on, two-day course to gain skills to:

- Develop basic software control skill sets
- Modify the software to support project management in the most user-friendly configuration
- Build templates
- Integrate project management disciplines
- Create a project from planning through reporting
- Problem solve

## Project Quality Management

Management in all industries is requiring that quality be an integral part of the project planning process. Attending *Project Quality Management* will show your project managers how to assume responsibility for the development and results of the project's related quality programs.

### Learn how to apply the following concepts and tools in this two-day course:

- Quality management concepts
- Key quality control tools (statistical process control, benchmarking, continuous improvement, total quality management, Theory of Constraints, and Six Sigma)
- The cost of quality
- Quality assurance
- Quality control
- The application of total quality management to project management

## Procurement Management

Procuring needed project resources is a vital task for project managers. Project procurement strategies can differ from corporate procurement strategies due to the project's constraints, availability of critical resources, and specific customer requirements. Understanding the combined roles and duties as a project manager and purchasing agent can greatly impact the project's profitability.

### Upon completion of this two-day course, you will understand:

- The roles and duties of the project manager in procurement management
- The legal relationship created by subcontracting
- Strategic teaming agreements
- Subcontract planning and scheduling
- How to monitor subcontractor performance

# Internet Access

[www.irc.caltech.edu](http://www.irc.caltech.edu)

# Course Leaders

## **Jerry L. Brown, PMP**

Jerry L. Brown, PMP, is principal of Project Methods, Inc. He provides project management consulting in the areas of financial management, risk management, project selection, scheduling, and Project Management Professional (PMP) certification preparation. His clients include Applied Biosystems, Boeing, IBM, Mobil, Motorola, Novartis, Sprint, Visa, and Walt Disney Imagineering.

Previously, Mr. Brown served as chief financial officer and vice president for Project Mentors. Mr. Brown was the founder and president of his own wholesale supply company for industrial, commercial, and construction needs. He has several years experience in the banking industry.

Mr. Brown is a Project Management Professional (PMP) and holds a masters of project management from George Washington University. He received his BS from Ohio State University.

## **David Callahan, PMP**

David Callahan is the founder and president of Serrano Consulting, Inc. He specializes in the project management of large technology related projects with an emphasis on software and information technology. With over 20 years of experience, he has managed projects for companies such as DIRECTV, Informix, Intel, and Sun Microsystems.

Mr. Callahan received his MBA from Pepperdine University and a BS in computer science from Wayne State University in Detroit, Michigan. He is a certified Project Management Professional (PMP).

## **Stephen L. Carman**

Stephen L. Carman is currently program manager at Northrop Grumman Space Technology. Mr. Carman has extensive experience with a wide range of scientific disciplines. He has managed payload design and development, spacecraft integration, launch operations, and mission operations activities.

He is an international speaker on risk management. The Project Management Institute awarded Mr. Carman their Outstanding Chapter President Award for his terms as president of the Los Angeles Chapter (1998 and 1999). He has also received numerous awards from NASA, as well as being a TRW Chairman's Award Nominee, Risk Management Process Development.

Mr. Carman earned his BSME from the University of California, Berkeley.

## **Chris Christensen, PMP**

Chris Christensen is a certified Project Management Professional (PMP) working with executives to more effectively manage their business with a focus on project management, future research, quality improvement, product development, and strategic planning. He is a certified Six Sigma Black Belt, Certified Quality Engineer, and Certified Quality Manager.

For over 30 years, he was a project and program manager in the high technology electronic component manufacturing and systems integration industries. Mr. Christensen has worked with Ablestik Adhesives, The Aerospace Corporation, Continental Foundries, Courtaulds Aircraft, Delco Machine and Gear, The Los Angeles Times, Pilkington Aerospace, RAND Corporation, Southern California Edison, Tosco Petroleum Refineries and Pipelines, TRW Space Systems Group, and Vivendi and Havas Software Development.

He holds an MBA, an MS in engineering, and a BS in physics.

## **Martin S. Conn**

Martin S. Conn is a principal with Great Circle Consulting Group, Inc. He specializes in the establishment of project management infrastructures, corporate project management offices and standards, and project management process and methodology customization.

Mr. Conn has taught project management to companies in the aerospace, entertainment, energy, pharmaceutical, construction, information technology, and new media industries. His clients have included AES Corporation, Baxter Pharmaseal, Boeing Satellite Systems, Computer Science Corporation, Department of Defense, DreamWorks, ITT Industries (Gilfillan), NRG Energy, Inc., QLogic, Southern California Edison, and Universal Studios.

Mr. Conn received his master's degree in the United Kingdom and his bachelor's degree from Tufts University. He has a diploma in computer programming.

## **Donald S. Remer, PhD, PE**

Donald S. Remer, PhD, PE, is a founding partner of the Claremont Consulting Group, providing training, consulting, and coaching in project management; software development and project cost and schedule estimation; capital investment evaluation; economics and technical feasibility analysis; systems engineering; and earned value management. His industrial and consulting experience includes aerospace, automotive, biotechnology, chemicals, computer systems, construction, electronics, energy and environmental projects, entertainment, medical products, petroleum, research and development laboratories, and utilities. His recent clients include Amgen, Booz-Allen & Hamilton, Disney, the major DOE national laboratories, FAA, Hewlett-Packard, Jet Propulsion Laboratory, Lear Astronics, Sequent Computer, Tanner Research, TRW, and 20th Century Fox.

Dr. Remer holds an endowed chair at Harvey Mudd College. He received his PhD and MS from the California Institute of Technology in engineering with a minor in business economics and his BS in engineering from the University of Michigan.

## **Michael D. Sheean**

Michael D. Sheean specializes in assessing organizational needs and helping to facilitate solutions to pressing organizational issues. He works with a variety of technical and service organizations focusing on leadership, team development, communication, and change. His clients have included ARCO, AT&T, Brooktree, Canadian Pacific, Computer Sciences Corporation, Northrop Grumman, Rockwell International, Southern California Edison, Tektronix, Terminal Data, Toyota Motor Sales, Tronomed, and Unocal.

Mr. Sheean helps clients initiate and develop management teams, project teams, and innovative problem solving teams as well as build a supportive climate for teams and teamwork. He assists management in developing the strengths and commitment of team members and in moving from autocratic to facilitative leadership practices.

Mr. Sheean was a faculty member of the School of Business Administration and Economics, California State University, Northridge. He holds an MBA from the University of Washington.

## **Tim Wallender**

Tim Wallender is the founder of Wallender & Associates, a firm specializing in earned value management, scheduling, and cost control systems. Mr. Wallender has over 23 years of hands-on experience with earned value management implementation using numerous software packages. Mr. Wallender's clients include Ball Corporation, The Boeing Company, DIRECTV, General Electric Company, IBM, Lockheed Martin, Loral, Northrop Grumman, Raytheon, Rockwell, and Vought Aircraft Industries.

Mr. Wallender previously worked as project manager for MILSTAR and other satellite programs, and as manager of Cost/Schedule Control Systems Criteria (C/SCSC) at the Northrop B-2 division. While at Northrop, he was responsible for rewriting the C/SCSC system description, internal surveillance, training, and subcontractor flowdown.

He worked at Hughes Aircraft Company's missile systems group. There, he rewrote the multi-group Hughes C/SCSC system description for internal coordination and provided training for cost account managers.

Mr. Wallender is a retired Air Force officer. He was a C/SCSC review director in the Air Force. He authored the first Air Force policy on conducting Integrated Baseline Reviews (IBRs). Mr. Wallender received his BS from the U.S. Air Force Academy.

## **Pam Wiedenbeck, PMP**

Pam Wiedenbeck, PMP, is president and founder of Plans Made Perfect, LLC. Ms. Wiedenbeck specializes in improving the communications and management skills of project managers.

She was managing director for SEI Information Technology. Her clients included Bank of America, Capital Group, McDonald's Corporation, and Reuters. Previously, she served as operations manager at SPSS, Inc., and as a staff scientist at the Lawrence Berkeley Laboratory.

Ms. Wiedenbeck earned her MS in planetary science from California Institute of Technology, executive MBA from the Peter F. Drucker Graduate School of Management at Claremont Graduate University, and BS in physics from the University of Michigan. She is a Project Management Professional (PMP).

# Project Management Certificate Program

## Core Courses

### Project Initiation, Costing, and Selection

- Establishing the business case
- Project charter
- Estimating techniques
- Life Cycle Costing (LCC)
- Project selection models

### Project Organization and Leadership

- Project manager roles and responsibilities
- Project management processes
- Effective cross-functional teams
- Organizational influences
- Conflict resolution
- Why projects succeed

### Detailed Project Planning

- Scope definition
- Work Breakdown Structure (WBS)
- Schedule development
- Estimating activity durations
- Critical path analysis (CPM)
- Integrated resource planning

### Project Monitoring and Control

- Trending and forecasting
- Progress reporting
- Variance control
- Re-planning
- Project reporting
- Managing change

### Project Risk Management

- Establishing a risk management process
- Risk identification and assessment
- Risk response planning
- Risk monitoring and control
- Contingency development

## Elective Courses

### Detailed Cost Estimating

- Estimating problem areas
- Methods of cost estimating
- Key elements in managing the process
- Emerging factors

### Earned Value Project Management

- Organizing work
- Integrating cost and schedule data
- Evaluating status
- Earned value definitions
- Forecasting future performance

### High-Performance Team Development

- Building a team
- Assessing team progress
- Deploying team member strengths
- Virtual teams

### Managing Multiple Projects

- Small project management
- Multiple project resource management and control
- Prioritizing

### Managing the Software Component of Projects

- Software organization
- Planning
- Development estimation
- Software staffing and productivity
- Organizing and controlling

### Project Management Tools

- MS Project 2000
- PS8
- Primavera

### Project Quality Management

- Quality planning
- Quality assurance
- Quality control tools
- Total quality management of projects

### Procurement Management

- Project/procurement interface
- Contracting methods
- Subcontracting
- Teaming
- Monitoring performance