

# Certified Process Design Engineer (CPDE)<sup>SM</sup> Certificate

Certified Process Design Engineer (CPDE)<sup>SM</sup> is a freestanding certification. The purpose of this course and the associated exam and certificate is to impart, test, and validate knowledge on best practices in the assessment, design, implementation, integration and management of IT service management processes. These best practices are documented in the Certified Process Design Engineer (CPDE)<sup>SM</sup> textbook. Certified Process Design Engineer (CPDE)<sup>SM</sup> is intended to enable holders of the certificate to apply a practical, step-by-step approach to designing and implementing IT service management processes.

### Target Group

The target group of the Certified Process Design Engineer (CPDE)<sup>SM</sup> certification is:

- Individuals who have attained a foundation-level certificate in IT service management (ITIL, COBIT, ISO/IEC 20000, Microsoft Operations Framework (MOF))
- Individuals who have a background in project management and seek an understanding of process design and management techniques
- Individuals who require a deep understanding of process assessment, design, implementation, integration and management techniques and how they may be used to enhance the quality of IT service management processes within an organization.
- IT professionals that are working within an organization that has adopted one or more IT service management or quality management frameworks or standards and seek an understanding of how to use frameworks as part of a continual improvement program
- Individuals who wish to enhance their role-based capabilities in activities such as organizational change management or the selection of process enabling technologies.

This may include but is not limited to IT professionals, process owners and managers, process champions, process stakeholders, business managers and business process owners.

### Learning Objectives

Candidates can expect to gain competencies in the following upon successful completion of the education and examination components of this certification:

- Foundational knowledge regarding IT service management process design
  - The changing role of IT
  - The importance of IT service management processes
  - The ISO/IEC 20000 international standard for IT service management
  - The value chain and its effect on your processes
  - The role of process maturity models
- Defining and analyzing customer requirements
- Quality management principles
- Defining and documenting processes
- Assessing process maturity
- The ten process design and improvement steps
- Process design and improvement tools and techniques
- Producing meaningful metrics
- Managing organizational change
- Evaluating and selecting IT service management technologies

### Prerequisite Entry Criteria

Candidates wishing to be trained and examined for this qualification must hold a foundation-level certificate in IT service management (ITIL, COBIT, ISO/IEC 20000 or MOF) which shall be presented as documentary evidence to gain admission.

It is also strongly recommended that candidates:

- Can demonstrate familiarity with IT terminology and understand the context of process assessment, design, implementation, integration and management within their own business environment
- Have experience working with at least one of the following service management or quality management frameworks or standards:
  - ITIL
  - COBIT
  - MOF
  - ISO/IEC 20000
  - ISO 9000
  - Total Quality Management (TQM)
  - Six Sigma
  - CMMI

### Eligibility for Examination

To be eligible for the examination leading to certification the candidate must fill the following requirements:

- Hold a foundation-level certificate in IT service management (ITIL, COBIT, ISO/IEC 20000, Microsoft Operations Framework (MOF))
- Complete at least 30 contact hours (hours of instruction, excluding breaks) with an Accredited Training Organization (ATO) for this syllabus, as part of a formal, approved training course/scheme

It is recommended that students complete at a minimum 12 hours of personal study by reviewing the syllabus and the pertinent areas of the Certified Process Design Engineer (CPDE)<sup>SM</sup> Learner Manual and Textbook

### Level of Difficulty

The Certified Process Design Engineer (CPDE)<sup>SM</sup> certification uses the Bloom Taxonomy of Educational Objectives in both the construction of the learning units and in the examination which is based on this syllabus.

A learning taxonomy is a scale of the degree of difficulty in the learning process. These levels apply to the cognitive, affective and psychomotor domains of learning but in this course we deal only with the cognitive sphere.

Bloom defines six levels of learning in the COGNITIVE domain which are both sequential and cumulative. They move from the simple to the complex. This implies that in order to achieve the sixth level of learning, for example, the instructor must ensure that the previous five levels have been mastered.

**The KNOWING level:** Here the student is able to bring to mind or remember the appropriate material. The behavioral tasks associated with this level tax the student's memory and include such tasks as defining, recalling, listing, recognizing, describing and naming.

**The COMPREHENDING stage:** Here the student is able to understand or grasp the meaning of what is being communicated and make use of the idea without relating it to other ideas or materials and without seeing the fullest possible meaning or translation of the idea. Behavioral tasks at this level would include stating in the students own words, giving examples of, illustrating, inferring, summarizing and interpreting. These actions involve the knowing which has taken place at the first level.

**The APPLYING level:** Here the student should be able to use ideas, principles and theories in new, particular and concrete situations. Behavioral tasks at this level involve both knowing and comprehension and might include choosing appropriate procedures, applying principles, using an approach or identifying the selection of options.

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**The ANALYZING level:** Here the student is able to break down a communication (rendered in any form) into constituent parts in order to make the organization and significance of the whole clear. Breaking down, discriminating, diagramming, detecting, differentiating and illustrating are important behavioral tasks at this level and can be seen to include the previous Bloom levels. Here the significance of the constituent parts of an entity are examined in order to understand the whole more fully.

**The SYNTHESIS level:** Here the student is able to put back together again the various parts or elements of a concept into a unified organization or whole. This putting together again and making sense of small parts is a crucial factor in intelligence and learning. Behavioral tasks at this level would include creating, writing, and designing, combining, composing, organizing, revising and planning. Learning at this level must include the first four Bloom levels. This level of learning is probably the most intense and exciting for student and teacher alike.

**The EVALUATING phase:** Here the student is able to arrive at an overview and to judge the value and relative merit of ideas or procedures by using appropriate criteria. At this level of learning the student will be able to compare, judge, appraise, justify, criticize and contrast theories, procedures, methods and concepts. This level involves mastery of the five previous levels of knowing, comprehending, applying analyzing and synthesizing.

For the purposes of the Certified Process Design Engineer (CPDE)<sup>SM</sup> certification, the Bloom level appears in each syllabus module. This Bloom reference identifies the highest level of cognitive difficulty that the course content should deliver to both meet the learning outcome and the competence required to meet the examination level of difficulty.

The Certified Process Design Engineer (CPDE)<sup>SM</sup> examination covers each syllabus learning unit. This means that a student must be prepared to be tested up to and including the specified Bloom level for any question related to each of the learning unit.

### Examination

The examination format consists of two parts.

- The first part consists of ten multiple choice questions constructed to assess a learner's knowledge of Bloom's Level 1 materials such as terms and definitions.
- The second part consists of complex, scenario-based multiple questions. A scenario is followed by multiple questions, each with a corresponding series of possible answers. Each is constructed to test a student's competency up to and including the Bloom level associated with the syllabus learning unit to which the question is mapped. Instructors should ensure that the course curriculum offers discussion, practical exercises and instruction that will satisfy the competency needed to meet the exam level of difficulty.

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The learning units that reflect a higher Bloom level are expected to provide a practical level of proficiency that will enable students to use the knowledge learned in their work environment. The examination tests students' ability to apply the knowledge learned in the course to the questions asked and select the correct answers.

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### Certified Process Design Engineer (CPDE) <sup>SM</sup> Syllabus

The Certified Process Design Engineer (CPDE) <sup>SM</sup> certification is awarded to those who complete the following units of study and successfully pass the relevant examination. The units cover the topics listed (section numbers from the source publications are included along with indicative contact study hours).

<p><b>CPDE<sup>SM</sup> 01</b></p> <p><b>Level of Difficulty – up to Bloom Level 4</b></p>	<p><b>Introduction to Processes and IT Service Management Concepts</b></p> <p>This unit introduces the candidate to basic process and IT service management concepts</p> <p>To meet the learning outcomes and examination level of difficulty, the candidates must be able to:</p> <ul style="list-style-type: none"> <li>• Explain why processes are important (Section 1.0)</li> <li>• Identify the components of a process (Section 1.0; Section 4.1)</li> <li>• Define the terminology associated with a process (Section 1.0)</li> <li>• Describe how IT supports business goals (Section 1.1)</li> <li>• Differentiate a core business process from a supporting process (Section 1.1)</li> <li>• Discuss the culture shift derived from a process-centric approach (Section 1.2)</li> <li>• Define a best practice (Section 1.3)</li> <li>• Identify the various service management best practice frameworks (Section 1.3)</li> <li>• Distinguish between the various service management best practice frameworks (Section 1.3)</li> <li>• Identify ISO/IEC 20000 as an international standard (Section 1.4)</li> <li>• Identify the processes within scope for ISO/IEC 20000 (Section 1.4)</li> <li>• Describe how the ISO/IEC 20000 processes are logically grouped (Section 1.4)</li> <li>• Explain a value chain and value network (Section 1.5)</li> <li>• Name the most commonly used process maturity frameworks (Section 1.6)</li> <li>• Identify the levels of the ITIL Process Maturity Framework (Section 1.6)</li> </ul> <p><b><i>The recommended minimum study period for this unit is 3 hours.</i></b></p>
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<p><b>CPDE<sup>SM</sup> 02</b></p> <p><b>Level of Difficulty – up to Bloom Level 3</b></p>	<p><b>Defining and Analyzing Customer Requirements</b></p> <p>This unit introduces the candidate to the concepts and terminology of quality management and associated Quality Management Systems</p> <ul style="list-style-type: none"> <li>• Explain how to gather customer requirements for a process (Section 2.1)</li> <li>• Describe how to conduct a customer survey (Section 2.1.1)</li> <li>• Identify the elements of a needs assessment (Section 2.1.2)</li> <li>• Indicate how to conduct a needs assessment (Section 2.1.2)</li> <li>• Explain the use of Service Level Agreements in determining customer requirements (Section 2.1.3)</li> <li>• Describe the practice of benchmarking (2.1.4)</li> </ul> <p><b><i>The recommended minimum study period for this unit is 2 hours.</i></b></p>
<p><b>CPDE<sup>SM</sup> 03</b></p> <p><b>Level of Difficulty – up to Bloom Level 4</b></p>	<p><b>Quality Management Principles</b></p> <p>This unit introduces the candidate to the concepts and terminology of Quality Management and associated Quality Management Systems</p> <p>To meet the learning outcomes and examination level of difficulty, the candidates must be able to:</p> <ul style="list-style-type: none"> <li>• Recognize the basic concepts and definitions of quality</li> <li>• Analyze various Quality Management Systems (Section 3.1)</li> <li>• Explain the Plan-Do-Check-Act Cycle (Section 3.1.1)</li> <li>• Describe the levels of the Capability Maturity Model Integration (CMMI) (Section 3.1.3)</li> <li>• Describe Six Sigma and Lean Six Sigma (Section 3.1.4; Section 3.1.5)</li> <li>• Discuss ISO 9000 and ISO 9001 (Section 3.1.6)</li> <li>• Explain a Quality Management System (Section 3.1.6)</li> <li>• Analyze why processes need to be designed or redesigned (Section 3.2)</li> <li>• Describe the elements that combine to make effective and efficient processes (Section 3.2.1; Section 3.2.2; Section 3.2.3)</li> <li>• Explain how to develop processes using best practice frameworks (Section 3.2.1)</li> <li>• Describe the purpose of the redesigning processes (Section 3.2.2)</li> </ul> <p>Explain how to continually improve processes (Section 3.2.3)</p> <p><b><i>The recommended minimum study period for this unit is 2 hours.</i></b></p>

<p><b>CPDE<sup>SM</sup> 04</b></p> <p><b>Level of Difficulty – up to Bloom Level 4</b></p>	<p><b>Defining and Documenting Processes</b></p> <p>This unit introduces the candidate to the key components of a process and the top down approach to process design.</p> <p>To meet the learning outcomes and examination level of difficulty, the candidates must be able to:</p> <ul style="list-style-type: none"> <li>• Identify the seven key components of a process (Section 4.0)</li> <li>• Discuss the characteristics of a Process Definition Document (Section 4.0)</li> <li>• Discuss the top down approach to process design (Section 4.1)</li> <li>• Describe the documents that must be controlled and managed as part of a Quality Management System (Section 4.1)</li> </ul> <p><b><i>The recommended minimum study period for this unit is 2 hours.</i></b></p>
<p><b>CPDE<sup>SM</sup> 05</b></p> <p><b>Level of Difficulty – up to Bloom Level 4</b></p>	<p><b>Assessing Process Maturity</b></p> <p>This unit introduces candidate to the benefits of assessing process maturity and the most commonly used assessment frameworks.</p> <p>To meet the learning outcomes and examination level of difficulty, the candidates must be able to:</p> <ul style="list-style-type: none"> <li>• Define process assessment terminology and concepts (Section 5.0)</li> <li>• Explain how to conduct a process maturity assessment (Section 5.1; Section 5.2)</li> <li>• Identify transition steps for each level of the ITIL Process Maturity Framework (Section 5.2)</li> <li>• Describe challenges for each level of the ITIL Process Maturity Framework (Section 5.2)</li> </ul> <p><b><i>The recommended minimum study period for this unit is 4 hours.</i></b></p>

<p><b>CPDE<sup>SM</sup> 06</b></p> <p><b>Level of Difficulty – up to Bloom Level 4</b></p>	<p><b>Process Design and Improvement Steps</b></p> <p>This unit introduces the candidate to the Ten Step Process Design and Improvement methodology for designing and implementing processes.</p> <p>To meet the learning outcomes and examination level of difficulty, the candidates must be able to:</p> <ul style="list-style-type: none"> <li>• Explain and analyze the structure (4 phases, 10 steps) and usage of the methodology (Section 6.1)</li> <li>• Explain and analyze the steps included in each phase of the methodology (Section 6.1) <ul style="list-style-type: none"> <li>○ Explain the importance of management vision and commitment</li> <li>○ Clarify the importance of a formal project methodology approach to process design</li> <li>○ Describe the key roles involved in a process design effort</li> <li>○ Describe how to define a process and gather customer requirements</li> <li>○ Diagram an “as is “ process using appropriate design tools and techniques</li> <li>○ Explain how to baseline current performance</li> <li>○ Describe how to assess conformance to requirements by conducting a gap analysis</li> <li>○ Explain how to baseline current performance</li> <li>○ Identify how to design (or redesign) a process by conducting a Process Design Workshop</li> <li>○ State how to solicit feedback, fine-tune and finalize the design</li> <li>○ Demonstrate how to implement the process</li> <li>○ Explain how to assess performance and continually improve</li> </ul> </li> </ul> <p><b><i>The recommended minimum study period for this unit is 5 hours.</i></b></p>
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<p><b>CPDE<sup>SM</sup> 07</b></p> <p><b>Level of Difficulty – up to Bloom Level 4</b></p>	<p><b>Process Design and Improvement Tools and Techniques</b></p> <p>This unit introduces the candidate to the tools and techniques that can be used to document, design and continually improve processes</p> <p>To meet the learning outcomes and examination level of difficulty, the candidates must be able to:</p> <ul style="list-style-type: none"> <li>• Describe the various process design maps (Section 7.1)</li> <li>• Identify the key benefits and usage of the seven basic tools of quality (Section 7.2)</li> <li>• Clarify the benefits and usage of other process design and improvement tools</li> </ul> <p><i><b>The recommended minimum study period for this unit is 4 hours.</b></i></p>
<p><b>CPDE<sup>SM</sup> 08</b></p> <p><b>Level of Difficulty – up to Bloom Level 4</b></p>	<p><b>Producing Meaningful Metrics</b></p> <p>This unit introduces the candidate to the concepts and techniques for producing metrics and a metrics program</p> <p>To meet the learning outcomes and examination level of difficulty, the candidates must be able to:</p> <ul style="list-style-type: none"> <li>• Define metrics related terminology (Section 8.0)</li> <li>• Differentiate between common practice and best practice for producing metrics (Section 8.1)</li> <li>• Show how to implement a best practices metrics program (Section 8.2; Section 8.2.1)</li> <li>• Describe how to use metrics for continual improvement (Section 8.2.2)</li> <li>• Describe how to automate metrics and produce meaningful reports (Section 8.2.3)</li> <li>• Clarify the role of Service Level Management in producing meaningful metrics (Section 8.3)</li> <li>• List the key elements of a successful metric program (Section 8.4)</li> </ul> <p><i><b>The recommended minimum study period for this unit is 2 hours.</b></i></p>

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<p><b>CPDE<sup>SM</sup> 09</b></p> <p><b>Level of Difficulty – up to Bloom Level 4</b></p>	<p><b>Organizational Change Management</b></p> <p>This unit introduces the candidate to the concepts and techniques for managing organizational change.</p> <p>To meet the learning outcomes and examination level of difficulty, the candidates must be able to:</p> <ul style="list-style-type: none"> <li>• Clarify the purpose and definition of organizational change management (Section 9.0)</li> <li>• Explain the steps for managing organizational change (Section 9.0)</li> <li>• Describe how to prepare for organizational changes including the steps to be followed to achieve smooth organizational change (Section 9.1)</li> <li>• Describe how to motivate individuals to accept organizational change (Section 9.2)</li> <li>• Identify how to establish an education and training effort to assist with organizational change (Section 9.3)</li> </ul> <p><b><i>The recommended minimum study period for this unit is 3 hours.</i></b></p>
<p><b>CPDE<sup>SM</sup> 10</b></p> <p><b>Level of Difficulty – up to Bloom Level 3</b></p>	<p><b>Service Management Technologies</b></p> <p>This unit introduces the candidate to the concepts and techniques of choosing technologies to support process design and usage of service management processes.</p> <p>To meet the learning outcomes and examination level of difficulty, the candidates must be able to:</p> <ul style="list-style-type: none"> <li>• Clarify the importance of developing processes prior to selecting technologies (Section 10.0)</li> <li>• Review the techniques for evaluating and selecting technologies (Section 10.) <ul style="list-style-type: none"> <li>○ How to evaluate and select technologies (Section 10.1)</li> <li>○ How to define technology requirements (Section 10.1.2)</li> <li>○ How to weigh technology requirements (Section 10.1.3)</li> <li>○ How to identify candidate vendors (Section 10.1.4)</li> <li>○ How to evaluate the candidates (Section 10.1.5)</li> <li>○ How to evaluate the finalists (Section 10.1.6)</li> <li>○ How to make a final technology decision (Section 10.1.7)</li> </ul> </li> <li>• Explain how to plan and manage a successful technology implementation (Section 10.2)</li> </ul> <p><b><i>The recommended minimum study period for this unit is 3 hours.</i></b></p>

### **Lecture and exercises**

Meeting the learning objectives of this syllabus can be assisted through the use of practical exercises during the delivery of an accredited course. It is recommended that course providers make use of exercises to enhance the reinforcement of the learning objectives in this syllabus. To aid course providers, there are learning objectives within each learning unit that include such phrases as “illustrate, discuss and use examples” which may be considered as opportunities to introduce practical course exercises. These are not mandated areas for practical exercises but are provided as suggestions for use by course providers.

### **Learning outcomes**

Following completion of this unit, the candidate will possess knowledge of:

- The importance of effective process design, documentation, assessment and management
- The need to adopt and adapt one or more service management best practice framework(s) as a starting point for designing or redesigning processes
- Multiple IT service management standards and best practice frameworks, their purpose and usage
- Multiple quality management frameworks, their purposes and usage
- Methodologies for assessing the maturity of existing processes
- The Ten Process Design and Improvement Steps that can be used to design, document and implement processes
- The importance of developing metrics and using them as a tool for improving processes
- The importance of managing organizational change as new or redesigned processes are introduced into an organization
- The importance of developing processes prior to selecting enabling technologies

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### Format of the Examination

This syllabus has an accompanying examination. Candidates must achieve a passing score to gain the Certified Process Design Engineer (CPDE)<sup>™</sup> Certificate.

Type	Two parts: <ul style="list-style-type: none"> <li>• 10 multiple choice questions (2 marks each)</li> <li>• 16 Scenario-based multiple choice question (5 marks each)</li> </ul>
Duration	90 minutes
Prerequisites	Foundation-level certificate in IT service management (ITIL, COBIT, ISO/IEC 20000, MOF)
Supervised	Yes
Open Book	No
Pass Score	65%
Distinction Score	N/A
Delivery	Paper Based Examination

### Criteria of Training Competence

This syllabus can only be delivered to target groups by an accredited provider/trainer. Any provider/trainer must hold the following qualifications to be eligible to provide this syllabus:

Criteria	Eligibility	Degree of Proficiency Validation
Accredited Training Organization	Required	The company shall be registered and in good standing with Loyalist Certification Services
Certified Process Design Engineer (CPDE) <sup>SM</sup>	Required	Instructor must present a valid certificate issued by an Loyalist Certification Services