IT Specialist (Training Road Map)

2010

IT Skill Standards Center

IT Human Resources Development Headquarters

INFORMATION-TECHNOLOGY PROMOTION AGENCY (IPA), JAPAN

Ministry of Economy, Trade and Industry

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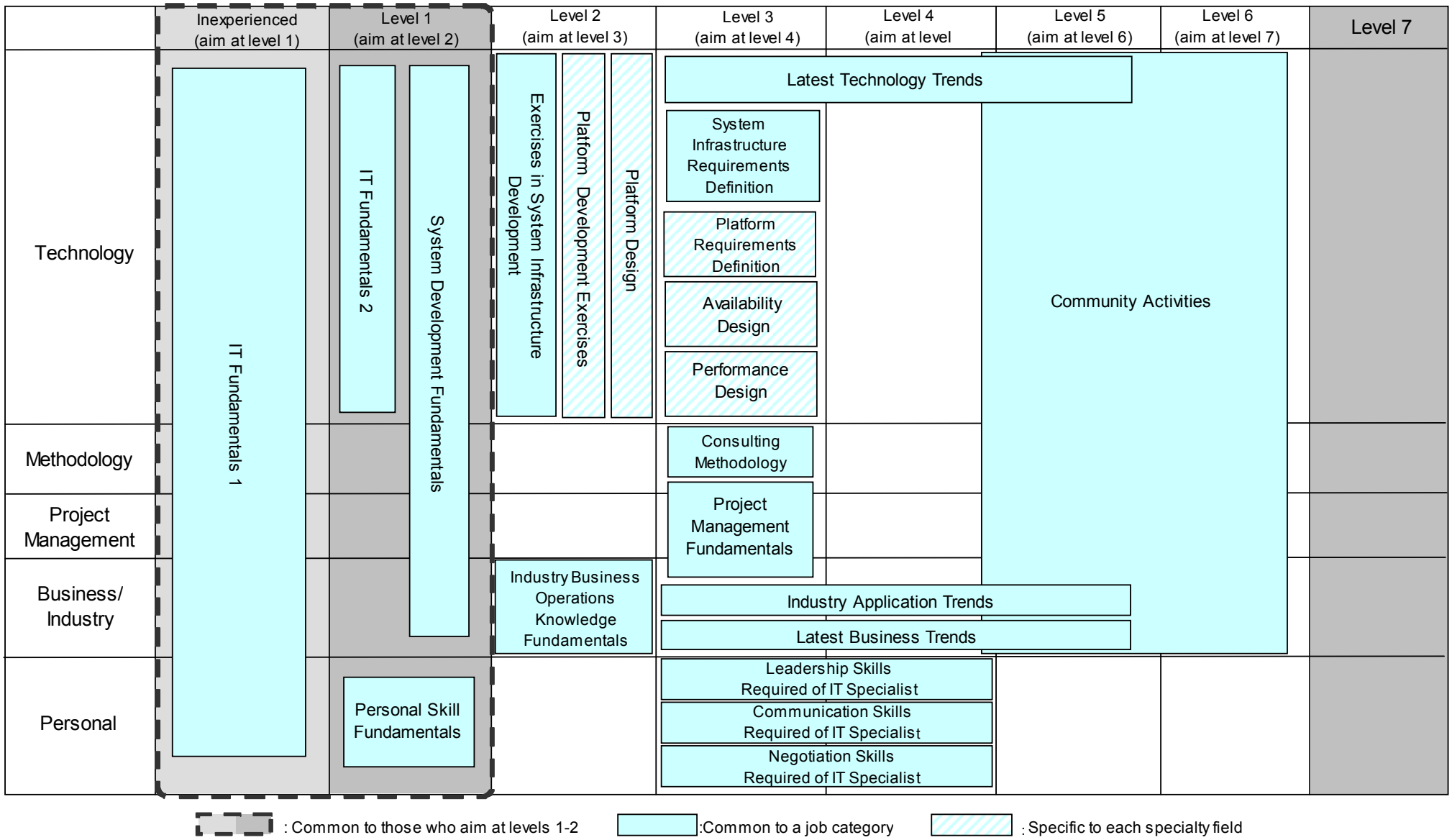
IT Specialist (Platform) Training Course Group



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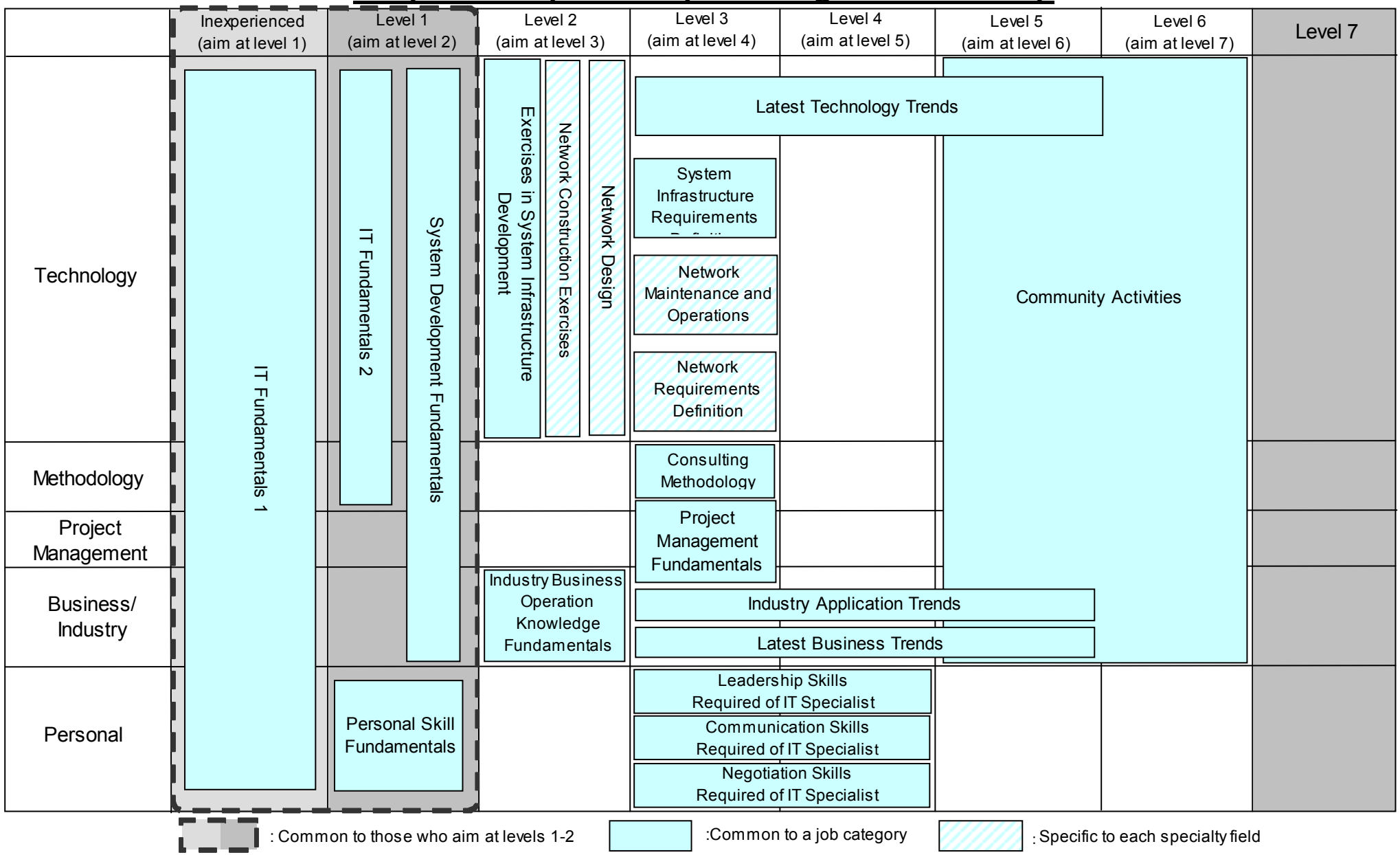
IT Specialist (Network) Training Course Group



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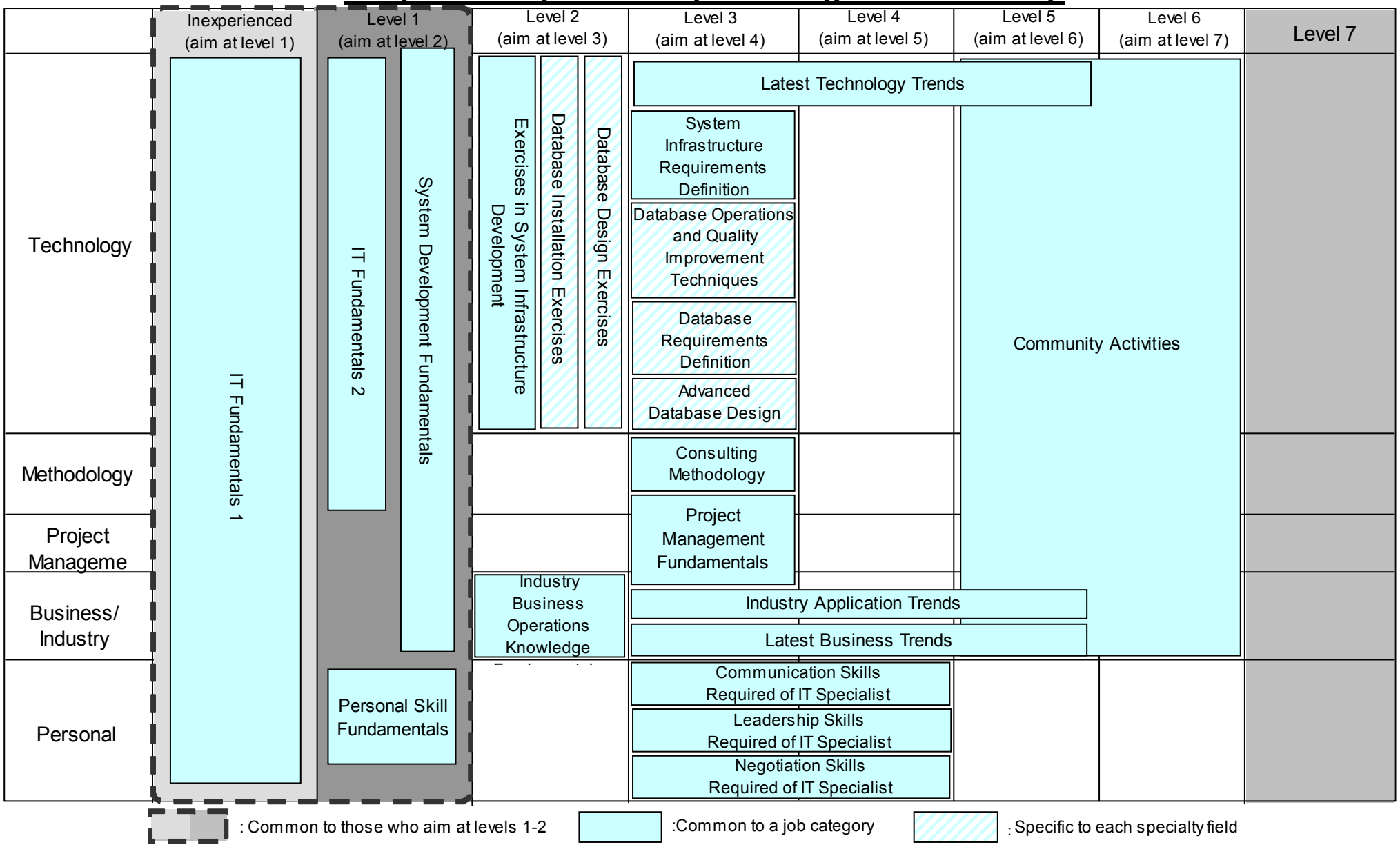
IT Specialist (Database) Training Course Group



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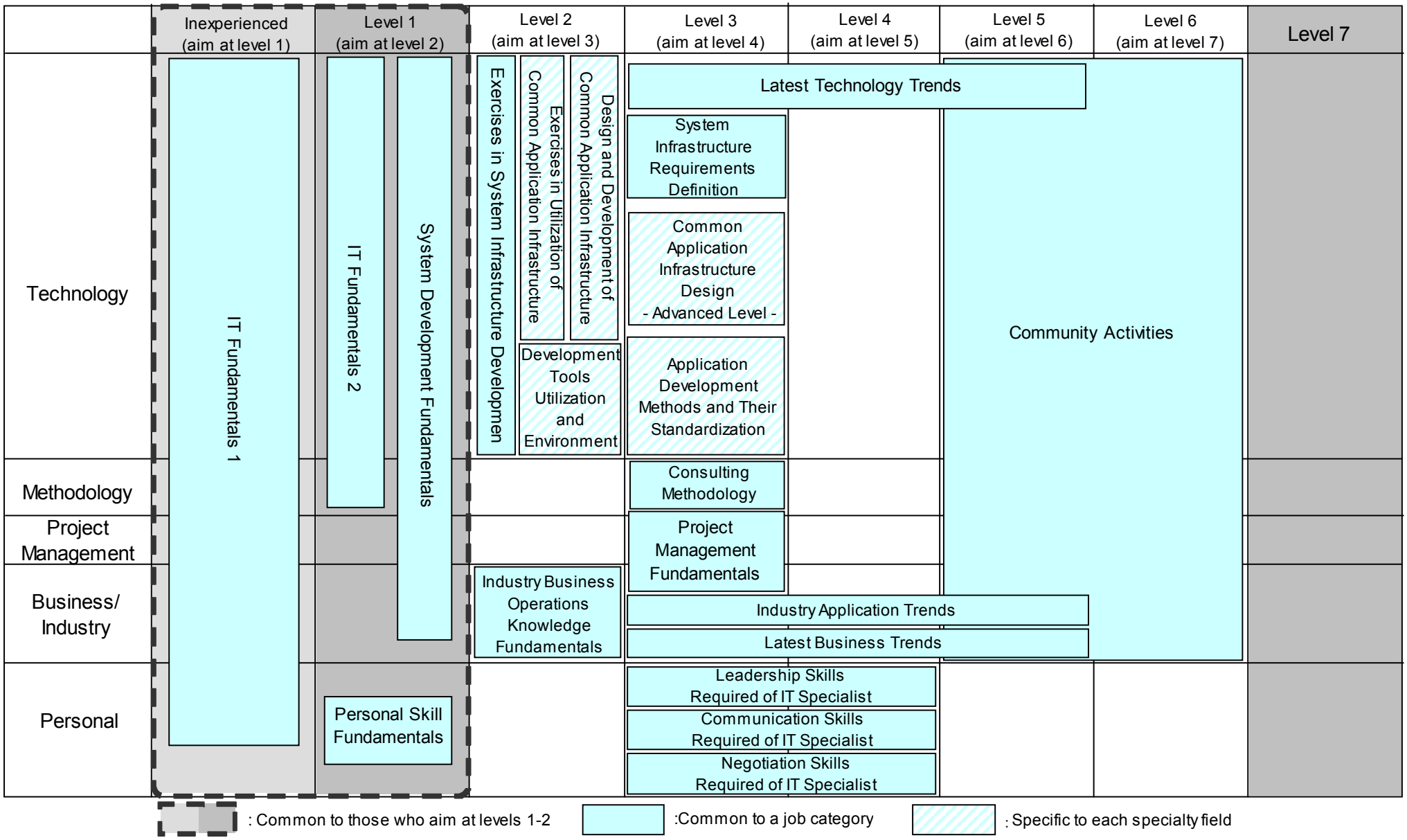
IT Specialist (Common Application Infrastructure) Training Course Group



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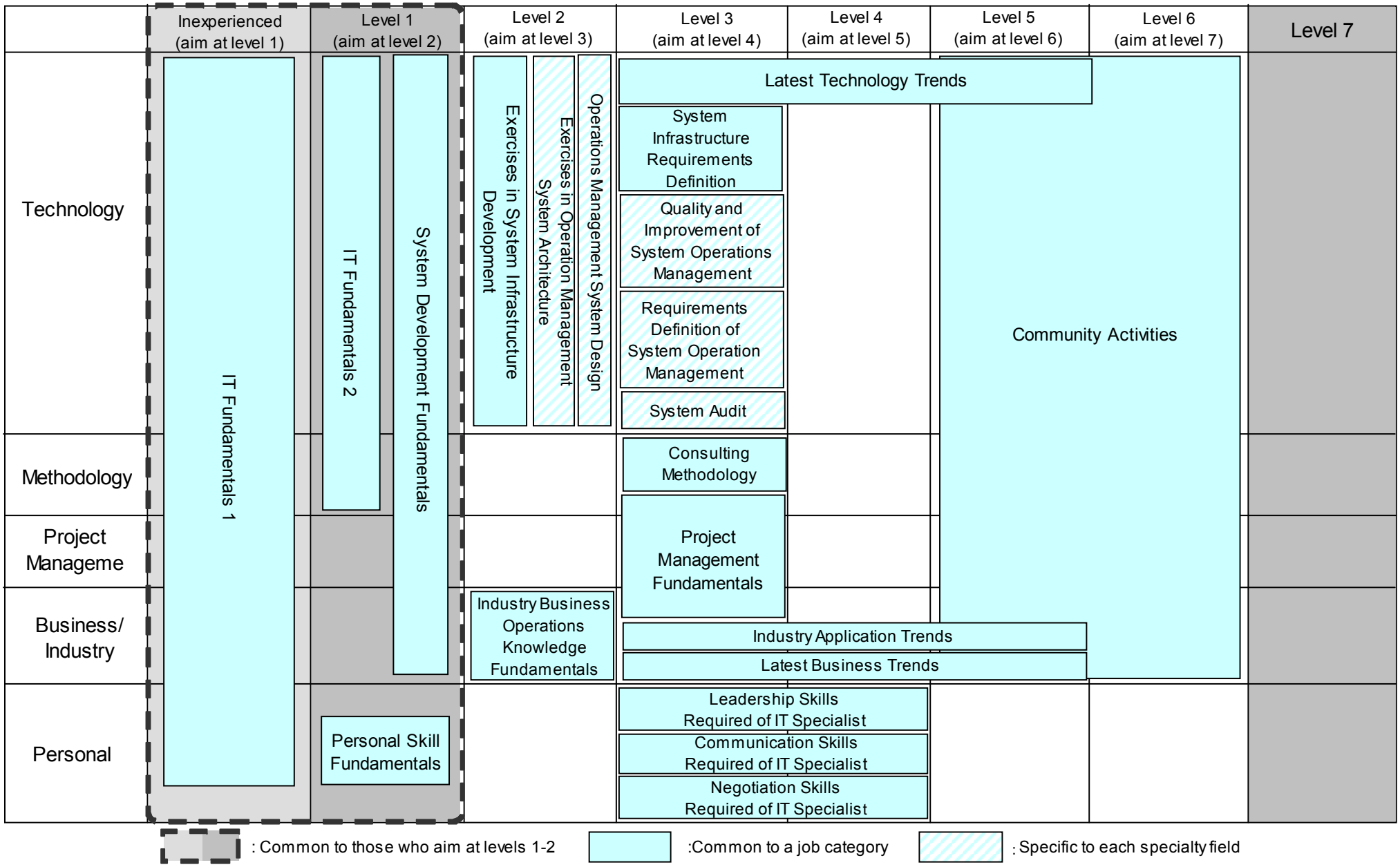
IT Specialist (System Management) Training Course Group



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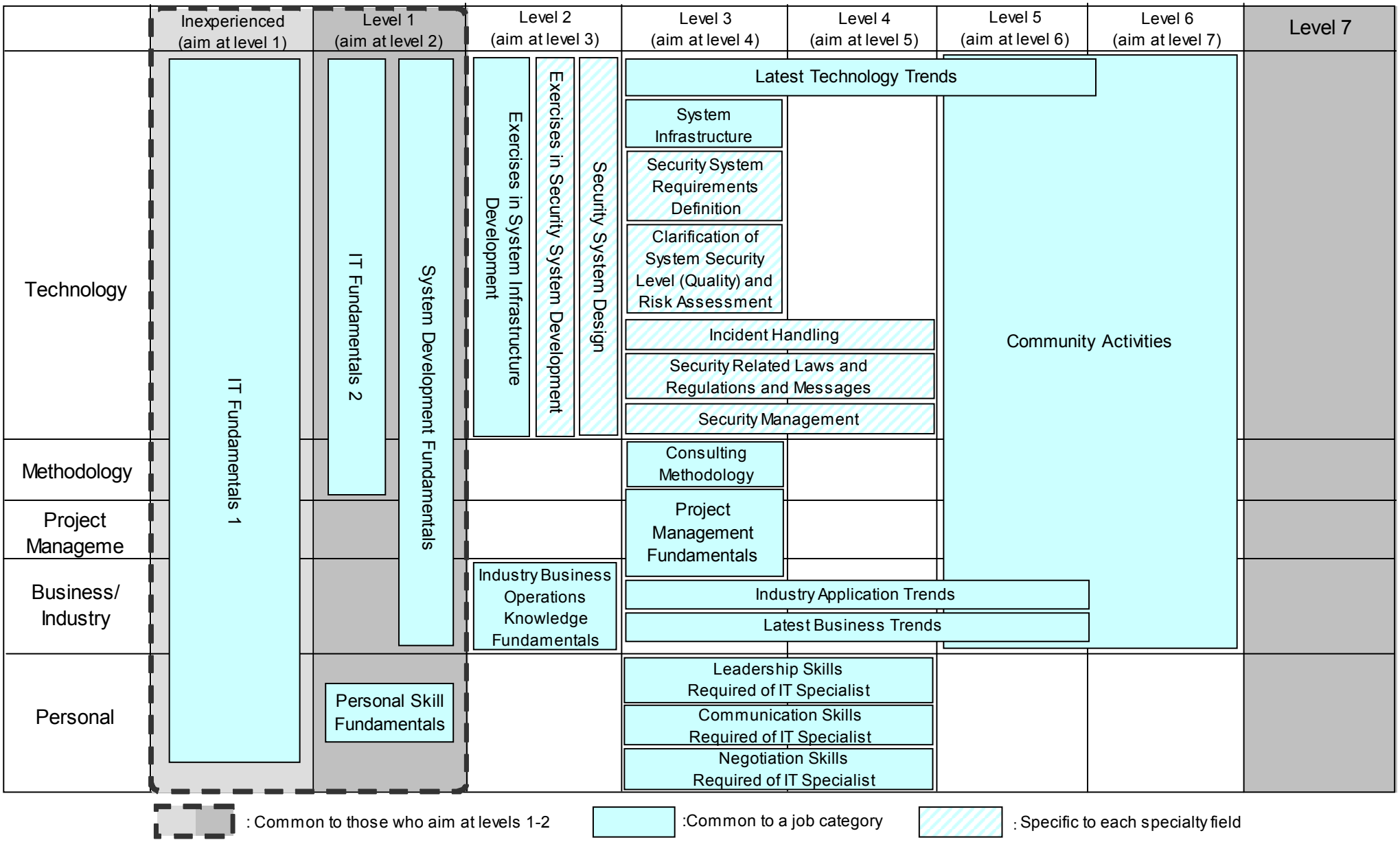
IT Specialist (Security) Training Course Group



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IT Specialist (Platform) Training Course List

Training Course Level		Training Course Group Name	Training Course Name	Method			Standard Duration		Page
				E-Learning	Lecture	Workshop	E-Learning (Total hours)	Class (Total days)	
Common to Job Category	Basic Course	Exercises in System Infrastructure Development	Exercises in System Infrastructure Development		*			3	16
		Industry Business Operations Knowledge Fundamentals	Industry Business Operations Knowledge Fundamentals	*			12		19
		Consulting Methodology	Consulting Methodology	*	*	*	12	2	22
		Project Management Fundamentals	Project Management Fundamentals	*			30		25
	Advanced Course	System Infrastructure Requirements Definition	System Infrastructure Requirements Definition		*			2	28
		Leadership Skills Required of IT Specialist	Leadership Skills Required of IT Specialist			*		3	31
		Communication Skills Required of IT Specialist	Communication Skills Required of IT Specialist			*		3	34
		Negotiations Skills Required of IT Specialist	Negotiations Skills Required of IT Specialist			*		3	37
	Special Course	Latest Technology Trends	Latest Technology Trends		*			1	40
		Industry Application Trends	Industry Application Trends	*	*		12	2	43
		Latest Business Trends	Latest Business Trends	*	*		3	0.5	46
		Community Activities	Community Activities	-	-	-	-	-	49
Specific to Each Specialty Field <Selective Courses>	Basic Course	Platform Development Exercises	Platform Development Exercises to Each Service		*	*		3	52
		Platform Design	Platform Design		*	*		3	55
	Advanced Course	Platform Requirements Definition	Platform Requirements Definition		*	*		3	58
		Availability Design	Availability Design		*	*		3	61
		Performance Design	Performance Design		*	*		3	64

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IT Specialist (Network) Training Course List

Training Course Level		Training Course Group Name	Training Course Name	Method			Standard Duration		Page
				E-Learning	Lecture	Workshop	E-Learning (Total hours)	Class (Total days)	
Common to Job Category	Basic Course	Exercises in System Infrastructure Development	Exercises in System Infrastructure Development		*			3	16
		Industry Business Operations Knowledge Fundamentals	Industry Business Operations Knowledge Fundamentals	*			12		19
		Consulting Methodology	Consulting Methodology	*	*	*	12	2	22
		Project Management Fundamentals	Project Management Fundamentals	*			30		25
	Advanced Course	System Infrastructure Requirements Definition	System Infrastructure Requirements Definition		*			2	28
		Leadership Skills Required of IT Specialist	Leadership Skills Required of IT Specialist			*		3	31
		Communication Skills Required of IT Specialist	Communication Skills Required of IT Specialist			*		3	34
		Negotiations Skills Required of IT Specialist	Negotiations Skills Required of IT Specialist			*		3	37
	Special Course	Latest Technology Trends	Latest Technology Trends		*			1	40
		Industry Application Trends	Industry Application Trends	*	*		12	2	43
		Latest Business Trends	Latest Business Trends	*	*		3	0.5	46
		Community Activities	Community Activities	-	-	-	-	-	49
Specific to Each Specialty Field <Selective Courses>	Basic Course	Network Construction Exercises	Network Installation Exercises to Each Service		*	*		2	67
			Network Construction Exercises		*	*		3	70
		Network Design	Network Design		*	*		3	73
		Network Maintenance and Operations	Network Maintenance and Operations		*	*		2	76
	Advanced Course	Network Requirements Definition	Network Requirements Definition		*	*		3	79

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IT Specialist (Database) Training Course List

Training Course Level		Training Course Group Name	Training Course Name	Method			Standard Duration		Page
				E-Learning	Lecture	Workshop	E-Learning (Total hours)	Class (Total days)	
Common to Job Category	Basic Course	Exercises in System Infrastructure Development	Exercises in System Infrastructure Development		*			3	16
		Industry Business Operations Knowledge Fundamentals	Industry Business Operations Knowledge Fundamentals	*			12		19
		Consulting Methodology	Consulting Methodology	*	*	*	12	2	22
		Project Management Fundamentals	Project Management Fundamentals	*			30		25
	Advanced Course	System Infrastructure Requirements Definition	System Infrastructure Requirements Definition		*			2	28
		Leadership Skills Required of IT Specialist	Leadership Skills Required of IT Specialist			*		3	31
		Communication Skills Required of IT Specialist	Communication Skills Required of IT Specialist			*		3	34
		Negotiations Skills Required of IT Specialist	Negotiations Skills Required of IT Specialist			*		3	37
	Special Course	Latest Technology Trends	Latest Technology Trends		*			1	40
		Industry Application Trends	Industry Application Trends	*	*		12	2	43
		Latest Business Trends	Latest Business Trends	*	*		3	0.5	46
		Community Activities	Community Activities	-	-	-	-	-	49
Specific to Each Specialty Field <Selective Courses>	Basic Course	Database Installation Exercises	Database Installation Exercises		*	*		3	85
		Database Design Exercises	Database Design Exercises		*	*		3	85
		Database Operations and Quality Improvement Techniques	Database Operations and Quality Improvement Techniques		*			3	88
	Advanced Course	Database Requirements Definition	Database Requirements Definition		*	*		3	91
		Advanced Database Design	Advanced Database Design		*	*		2	94

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IT Specialist (Common Application Infrastructure) Training Course List

Training Course Level		Training Course Group Name	Training Course Name	Method			Standard Duration		Page
				E-Learning	Lecture	Workshop	E-Learning (Total hours)	Class (Total days)	
Common to Job Category	Basic Course	Exercises in System Infrastructure Development	Exercises in System Infrastructure Development		*			3	16
		Industry Business Operations Knowledge Fundamentals	Industry Business Operations Knowledge Fundamentals	*			12		19
		Consulting Methodology	Consulting Methodology	*	*	*	12	2	22
		Project Management Fundamentals	Project Management Fundamentals	*			30		25
	Advanced Course	System Infrastructure Requirements Definition	System Infrastructure Requirements Definition		*			2	28
		Leadership Skills Required of IT Specialist	Leadership Skills Required of IT Specialist			*		3	31
		Communication Skills Required of IT Specialist	Communication Skills Required of IT Specialist			*		3	34
		Negotiations Skills Required of IT Specialist	Negotiations Skills Required of IT Specialist			*		3	37
	Special Course	Latest Technology Trends	Latest Technology Trends		*			1	40
		Industry Application Trends	Industry Application Trends	*	*		12	2	43
		Latest Business Trends	Latest Business Trends	*	*		3	0.5	46
		Community Activities	Community Activities	-	-	-	-	-	49
Specific to Each Specialty Field <Selective Courses>	Basic Course	Exercises in Utilization of Common Application Infrastructure	Exercises in Utilization of Common Application Infrastructure	*	*	*	18	3	97
		Design and Development of Common Application Infrastructure	Design and Development of Common Application Infrastructure	*	*	*	18	3	100
		Development Tools Utilization and Environment Setup	Development Tools Utilization and Environment Setup		*	*		3	104
	Advanced Course	Common Application Infrastructure Design - Advanced Level -	Common Application Infrastructure Design - Advanced Level -	*	*	*	18	2	107
		Application Development Methods and Standardization	Application Development Methods and Standardization		*	*		4	111

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IT Specialist (System Management) Training Course List

Training Course Level		Training Course Group Name	Training Course Name	Method			Standard Duration		Page
				E-Learning	Lecture	Workshop	E-Learning (Total hours)	Class (Total days)	
Common to Job Category	Basic Course	Exercises in System Infrastructure Development	Exercises in System Infrastructure Development		*			3	16
		Industry Business Operations Knowledge Fundamentals	Industry Business Operations Knowledge Fundamentals	*			12		19
		Consulting Methodology	Consulting Methodology	*	*	*	12	2	22
		Project Management Fundamentals	Project Management Fundamentals	*			30		25
	Advanced Course	System Infrastructure Requirements Definition	System Infrastructure Requirements Definition		*			2	28
		Leadership Skills Required of IT Specialist	Leadership Skills Required of IT Specialist			*		3	31
		Communication Skills Required of IT Specialist	Communication Skills Required of IT Specialist			*		3	34
		Negotiations Skills Required of IT Specialist	Negotiations Skills Required of IT Specialist			*		3	37
	Special Course	Latest Technology Trends	Latest Technology Trends		*			1	40
		Industry Application Trends	Industry Application Trends	*	*		12	2	43
		Latest Business Trends	Latest Business Trends	*	*		3	0.5	46
		Community Activities	Community Activities	-	-	-	-	-	49
Specific to Each Specialty Field <Selective Courses>	Basic Course	Exercises in Operations Management System Development	Exercises in Operations Management Software Installation		*	*		3	115
			Operations Management System Development		*	*		3	118
	Advanced Course	Operations Management System Design	Operations Management System Design		*	*		3	122
		Quality and Improvement of System Operations Management	Quality and Improvement of System Operations Management		*	*		3	126
		Requirements Definition of System Operations Management	Requirements Definition of System Operations Management		*	*		3	131
		System Audit	System Operations Audit		*	*		2	136

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IT Specialist (Security) Training Course List

Training Course Level		Training Course Group Name	Training Course Name	Method			Standard Duration		Page
				E-Learning	Lecture	Workshop	E-Learning (Total hours)	Class (Total days)	
Common to Job Category	Basic Course	Exercises in System Infrastructure Development	Exercises in System Infrastructure Development		*			3	16
		Industry Business Operations Knowledge Fundamentals	Industry Business Operations Knowledge Fundamentals	*			12		19
		Consulting Methodology	Consulting Methodology	*	*	*	12	2	22
		Project Management Fundamentals	Project Management Fundamentals	*			30		25
	Advanced Course	System Infrastructure Requirements Definition	System Infrastructure Requirements Definition		*			2	28
		Leadership Skills Required of IT Specialist	Leadership Skills Required of IT Specialist			*		3	31
		Communication Skills Required of IT Specialist	Communication Skills Required of IT Specialist			*		3	34
		Negotiations Skills Required of IT Specialist	Negotiations Skills Required of IT Specialist			*		3	37
	Special Course	Latest Technology Trends	Latest Technology Trends		*			1	40
		Industry Application Trends	Industry Application Trends	*	*		12	2	43
		Latest Business Trends	Latest Business Trends	*	*		3	0.5	46
		Community Activities	Community Activities	-	-	-	-	-	49
Specific to Each Specialty Field <Selective Courses>	Basic Course	Exercises in Security System Development	Exercises in Security System Installation		*			3	144
			Exercises in Security System Development		*			4	144
	Advanced Course	Security System Design	Security System Design		*			3	147
		Security System Requirements Definition	Security System Requirements Definition					2	150
		Clarification of System Security Levels (Quality) and Risk Assessment	Clarification of System Security Levels and Risk Assessment					2	154
		Incident Handling	Incident Handling in System Security		*			2	157
		Security Related Laws and Regulations and Messages	Security Related Laws		*			2	160
		Security Management	Security Management		*			2	163

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IT Specialist

Training Course Description

<Common to IT Specialist>

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Exercises in System Infrastructure Development (1 course)

●Exercises in System Infrastructure Development

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Course Name / Content	Exercises in System Infrastructure Development
Training Course Level	☐Introductory Course ■Basic Course ☐Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	■Common to IT Specialist ☐Platform ☐System Management ☐Database ☐Common Application Infrastructure ☐Network ☐Security
Outline	Aim: Attendees perform exercises in actual steps of system infrastructure development and understand a sequence of work procedures and management points. ○Project plans ○Exercises in system infrastructure development work
Attendee	Those who aim to acquire the knowledge of IT Specialist level 3 Those of their job categories are IT Architect, Project Management, Application Specialist, or IT Service Management, and aim to acquire knowledge of system development steps
Precondition	- -
Training Method	Lecture
Duration	Standard term: 3 days (classroom)
Learning Goal	Can understand a series of general steps of system infrastructure development and apply the steps to business activities as a member of a technical team.

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Skill Items	Knowledge Items
Technology	-IT Infrastructure Development Process Security Policy and Formulation of Measurement Criteria, System Plan Formulation, System Requirements Definition, System Architecture Design, Migration Design, Development and Tests, Maintenance, Fault Management, System Assessment and Improvement, Security Audit -Computer Systems Hardware, Operating Systems, System Structure and Architecture, System Application -Platform Implementation Technology Architecture Parameter Design (Hardware, OS, Middleware, etc.), Architecture Working Design (Architecture Procedure Design, Work Instruction Preparation, etc.), Platform Test Design (Test Case Preparation, Work Instruction Preparation, etc.) -Platform Architecture Technology Product Installation Technology, Architecture Parameter Setup, Test Techniques for Platform Architecture

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Industry Business Operations Knowledge Fundamentals (1 course)

●Industry Business Operations Knowledge Fundamentals

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Course Name / Content	Industry Business Operations Knowledge Fundamentals
Training Course Level	☐Introductory Course ■Basic Course ☐Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	■Common to IT Specialist ☐Platform ☐System Management ☐Database ☐Common Application Infrastructure ☐Network ☐Security
Outline	Aim: Attendees acquire knowledge of current industries and their business operations and fundamental knowledge of applications currently used or considered to be used in the future. ○The attendees learn common business operations (e.g., sales, accounting, and human resource management) to many industries, specific business operations to each industry, and types of applications utilized in the specific business operations. Basic knowledge is a central aim, and only an overview of specific business operations in each industry is provided. To learn specialistic knowledge of specific business operations in each industry is necessary after learning basic knowledge of business operations through this course.
Attendee	Those who have participated in system development projects as members of technical teams (those who aim to acquire the knowledge of IT Specialist level 3)
Precondition	Have completed IT Fundamentals 1 course group and IT Fundamentals 2 course group, or possess equivalent knowledge.
Training Method	E-learning
Duration	Standard term: 12 hours (e-learning 6 hours/day x 2 days)
Learning Goal	Can develop, operate, and maintain an information system an information system as a member of a technical team by utilizing fundamental knowledge of industry operations.

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Skill Items	Knowledge Items
Analysis of Business Operations	-General Business Contents General Business Contents, Understanding and Utilization of Characteristics, Understanding and Utilization of Industry-specific Standard Technology -Industry Knowledge Knowledge Utilization of Industry Specific Applications, Industry Business Trends and Technology Trends and Understanding of Competition Status, Understanding and Utilization of Industry Terms and Relevant Regulations, Understanding and Utilization of Industry Specific Business Environment, Understanding and Utilization of Industry Specific Business Practice, Understanding and Utilization of Industry Specific Business Contents, Knowledge Utilization of Industry Common Applications

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Consulting Methodology (1 course)

●Consulting Methodology

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Course Name / Content	Consulting Methodology
Training Course Level	☐Introductory Course ■Basic Course ☐Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	■Common to IT Specialist ☐Platform ☐System Management ☐Database ☐Common Application Infrastructure ☐Network ☐Security
Outline	Aim: Attendees understand fundamental consulting methodology, consulting processes, and techniques utilized in the consulting processes. The attendees also learn how to utilize the consulting related knowledge and techniques above. ○In the first half, the attendees learn the following via e-learning type methods: a flow of entire consulting processes using consulting techniques, techniques for data collection, data organization, and data analysis, problem extraction, problem analysis techniques, review of problem solving plans, how to formulate the problem solving plans, problem solving processes, how to prepare logical and effective reports, presentation, and negotiation. In the second half, the attendees learn how to apply consulting processes utilizing consulting methodologies, and review example cases of the consulting processes in workshops.
Attendee	Those who have participated in projects as members of technical teams (those who aim to acquire the knowledge of IT Specialist level 4)
Precondition	Have completed System Development Fundamentals course group, or possess equivalent knowledge.
Training Method	E-learning, Lecture, Workshop
Duration	[First Half] Standard term: 12 hours (e-learning 6 hours/day x 2 days) [Second Half] Standard term: 2 days (classroom)
Learning Goal	Can participate in projects such as system design, system development, and system installation as a leader of a technical team by utilizing fundamental consulting knowledge.

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Skill Items	Knowledge Items
Knowledge Management and Utilization	-Management and Utilization of Knowledge Database Creation of Knowledge (Added Value, Structuring, Sharing), Knowledge Utilization, Maintenance and Management of Knowledge, Effects Understanding and Improvement, Business Model Patents
Consulting Techniques Utilization	-Selection and Utilization of Consulting Techniques Comparison and Analysis and Selection and Application of Consulting Techniques, Definition and Practice of Process, Deliverables Definition -Understanding and Utilization of Analysis Tools and Models Business Life Cycle (Installation Stage, Growth Stage, Maturity Stage, Decline Stage) Models, Product Portfolio Management (PPM) Models, Experience Curve, 3C Analysis, SWOT Analysis, 7S Models, Michael Porter's Five Forces Model, Value Chain Analysis

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Project Management Fundamentals (1 course)

●Project Management Fundamentals

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Course Name / Content	Project Management Fundamentals
Training Course Level	☐Introductory Course ■Basic Course ☐Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	■Common to IT Specialist ☐Platform ☐System Management ☐Database ☐Common Application Infrastructure ☐Network ☐Security
Outline	Aim: Attendees acquire fundamental knowledge of project management. ○The attendees learn, based on "PMBOK", a general concept of project management that covers all aspect of basic project management knowledge (e.g., project definitions, organization, plan formulation, schedule planning, project implementation, project management, and project completion) and that is not biased by characteristics of industries or fields.
Attendee	Those who have participated in projects as members of technical teams (those who aim to acquire the knowledge of IT Specialist level 4)
Precondition	Possess fundamental knowledge of information system development and have participated in projects.
Training Method	E-learning
Duration	Standard term: 30 hours (6 hours/day x 5 days)
Learning Goal	Can perform project management activities as a member of a technical team by utilizing fundamental knowledge of project management.

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Skill Items	Knowledge Items
Project Management	-Project Integration Management Develop Project Charter, Develop Preliminary Project Scope Statement, Develop Project Management Plan, Direct and Manage Project Execution, Monitor and Control Project Work, Integrated Change Control, Close Project -Project Scope Management Scope Planning, Scope Definition, Create WBS, Scope Verification, Scope Control -Project Time Management Activity Definition, Activity Sequencing, Activity Resource Estimating, Activity Duration Estimating, Schedule Development, Schedule Control -Project Cost Management Cost Estimating, Cost Budgeting, Cost Control -Project Quality Management Quality Planning, Perform Quality Assurance, Perform Quality Control -Project Human Resource Management Human Resource Planning, Acquire Project Team, Develop Project Team, Manage Project Team -Project Communications Management Communications Planning, Information Distribution, Performance Reporting, Manage Stakeholders -Project Risk Management Risk Management Planning, Risk Identification, Qualitative Risk Analysis, Quantitative Risk Analysis, Risk Response Planning, Risk Monitoring and Control -Project Procurement Management Plan Purchases and Acquisitions, Plan Contracting, Request Seller Responses, Select Sellers, Contract Administration, Contract Closure

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System Infrastructure Requirements Definition (1 course)

●System Infrastructure Requirements Definition

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Course Name / Content	Common to IT Specialist: System Infrastructure Requirements Definition
Training Course Level	☐Introductory Course ☐Basic Course ■Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	■Common to IT Specialist ☐Platform ☐System Management ☐Database ☐Common Application Infrastructure ☐Network ☐Security
Outline	Aim: Attendees learn and perform exercises in how to define requirements necessary for system infrastructure development. ○An overview of requirements definition -Functional requests (business requests, operations requests) -Non-functional requests (quality requests, restrictions) ○Current status and problems on requirements definition -Customer's problems to be solved -Impact of inadequate requirements -Root causes of system failures -Requirements definition methodologies Decision on system architecture, decision on system configurations, operations requirements, reliability requirements, security requirements, performance and capacity requirements, relations between requirements lists and documents - Proposals of solution Template utilization, configurator utilization, solution pattern utilization -Risk management in infrastructure architecture Contracts, examples of SLA, SLA
Attendee	Those who aim to acquire the knowledge of IT Specialist level 4 Those whose specialty fields are Application Specialist, IT Service Management, Project Management, or IT Architect, and aim to acquire knowledge of system development steps
Precondition	- -
Training Method	Lecture
Duration	Standard term: 2 days (classroom)
Learning Goal	Can understand how to define requirements important for system infrastructure development and apply it to business activities as a leader of a technical team.

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Skill Items	Knowledge Items
Technology	-Basis of System Nonfunctional Requirement Reliability, Availability, Expandability, Capacity, Security
Platform System Architecture	-Platform Requirement Definition Techniques Availability Requirements, Performance Requirements, Expandability Requirements, Security Requirement (User Definition, Authority Definition), Capacity Requirements
Network System Architecture	-Requirement Definition of Network System Application Requirement Analysis, Existing Network Systems Analysis (Traffic, Physical and Logical Composition, etc.), Work Scope Definition, Requirements Definition for Network Systems, Network related Laws and Regulations
System Management System Architecture	-System Operational Method Techniques System Operational Management Methods (Job Automatic Control, etc.), Monitoring Methods (Operation Monitoring, Failure Monitoring, Performance Monitoring, Threshold Monitoring), Backup/Recovery Methods
System Management Component Related Technology	-Service Delivery Service Level Management (including Performance Management), Financial Management for IT Services, Capacity Management, Availability Management, IT Service Continuity Management

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Leadership Skills Required of IT Specialist (1 course)

●Leadership Skills Required of IT Specialist

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Course Name / Content	Leadership Skills Required of IT Specialist
Training Course Level	☐Introductory Course ☐Basic Course ■Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	■Common to IT Specialist ☐Platform ☐System Management ☐Database ☐Common Application Infrastructure ☐Network ☐Security
Outline	Aim: Attendees acquire practical skills of the following that are success factors of any projects: object setting, team building, communication with people within and outside teams, creation of project action items, promotion of the project action items, management of the project action items, and skills for motivating team members. ○The attendees learn, in workshops including role-play, the following required to promote medium-sized, large-sized, or complex projects: leadership, self motivation, motivating team members through team building, interpersonal skills, discord management, and consensus building.
Attendee	Those who have completed projects as leaders or members of technical teams (those who aim to acquire the knowledge of IT Specialist level 4 or 5)
Precondition	Have completed Personal Skill Fundamentals, or possess equivalent knowledge.
Training Method	Workshop
Duration	Standard term: 3 days (classroom)
Learning Goal	Can take leadership as a person responsible for or a leader of the technical team by utilizing practical skills of management and operations of a technical team.

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Skill Items	Knowledge Items
Leadership	-Leadership Fundamentals and Principles of Leadership, Teamwork and Communication, Project Objectives Setting, Project Promotion, Project Execution, Project Management, Collaboration Between Team Members, Motivating Team Members and Provision for Feelings of Accomplishment

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Communication Skills Required of IT Specialist (1 course)

●Communication Skills Required of IT Specialist

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Course Name / Content	Communication Skills Required of IT Specialist
Training Course Level	☐Introductory Course ☐Basic Course ■Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	■Common to IT Specialist ☐Platform ☐System Management ☐Database ☐Common Application Infrastructure ☐Network ☐Security
Outline	Aim: Attendees acquire the following practical skills that are a success factor of any projects: effective and efficient communication with people involved in projects. ○The attendees learn, in workshops including role-play, the following important for promotion of medium-sized, large-sized, or complex projects: two-way communication, passing of information, and processing of information.
Attendee	Those who have completed projects as leaders or members of technical teams (those who aim to acquire the knowledge of IT Specialist level 4 or 5)
Precondition	Have completed Personal Skill Fundamentals, or possess equivalent knowledge.
Training Method	Workshop
Duration	Standard term: 3 days (classroom)
Learning Goal	Can promote interaction with people involved in a project as a person responsible for or a leader of a technical team by utilizing practical communication skills.

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Skill Items	Knowledge Items
Communication	-2-Way Communication Dialogue and Interview, Information Transfer, Utilization and Practice of Communication Techniques, Utilization and Practice of Effective Speaking and Listening -Transmission of Information Utilization and Practice of Presentation Techniques, Utilization and Practice of Creation of Official and Non-official Documents, Technical Writing, Media Selection, Utilization and Practice of Persuasion Techniques -Organization, Analysis and Retrieval of Information Development and Practice of Status Response Capabilities to Understand Situations, Utilization and Practice of Capabilities to Understand Situations, Utilization and Practice of Meeting Management Techniques

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Negotiation Skills Required of IT Specialist (1 course)

●Negotiation Skills Required of IT Specialist

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Course Name / Content	Negotiation Skills Required of IT Specialist
Training Course Level	☐Introductory Course ☐Basic Course ■Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	■Common to IT Specialist ☐Platform ☐System Management ☐Database ☐Common Application Infrastructure ☐Network ☐Security
Outline	Aim: Attendees acquire practical skills of negotiation important for any situations or scenes in projects. ○About negotiation with people concerned with any scenes or situations in medium-sized, large-sized, or complex projects, the attendees learn and perform role-play in workshops in how to divide negotiation phases into several phases, how to understand expected problems, and how to formulate problem solving solutions with negotiating partners.
Attendee	Those who have completed projects as leaders or members of technical teams (those who aim to acquire the knowledge of IT Specialist level 4 or 5)
Precondition	Have completed Personal Skill Fundamentals, or possess equivalent knowledge.
Training Method	Workshop
Duration	Standard term: 3 days (classroom)
Learning Goal	Can to negotiate with others on customer side as a person responsible for or a leader of a technical team by utilizing practical negotiation skills in projects.

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Skill Items	Knowledge Items
Negotiation	-Negotiation Utilization and Practice of Negotiation Process, Utilization and Practice of Effective Negotiation Techniques, Establishment of Trust Relationship, Objectives Setting, Common Interest, Practice of Logical Thinking, Utilization and Practice of Problem Solving Techniques

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Latest Technology Trends (1 course)

●Latest Technology Trends

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Course Name / Content	Latest Technology Trends
Training Course Level	☐Introductory Course ☐Basic Course ☐Advanced Course ■Special Course
Training Area (Common or Specialty Field)	■Common to IT Specialist ☐Platform ☐System Management ☐Database ☐Common Application Infrastructure ☐Network ☐Security
Outline	Aim: Attendees learn the latest technology trends surrounding IT services and acquire knowledge of how to apply the latest technology trends to actual business. ○The attendees learn sizes and trends of IT markets in domestic and abroad IT markets, present and future IT, next-generation e-business, and its future growth. ○Training contents are provided on given themes according to need, and the attendees select a theme to take part in a lecture for maintaining or improving their skills at regular intervals or when needed.
Attendee	Those who should keep up with their different kinds of technology knowledge as persons responsible for, leaders of, or members of technical teams (those who aim to acquire the knowledge of IT Specialist level 4, 5, or 6)
Precondition	Possess fundamental IT knowledge and who have experience and results of solution development.
Training Method	Lecture
Duration	Standard term: 1 day (classroom)
Learning Goal	Can participate in projects such as system design, system development, system architecture, system operations, and system maintenance as a person responsible for or a leader of a technical team by utilizing knowledge of the latest technology.

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Skill Items	Knowledge Items
Technology	-Latest Technology Trends Understanding of Latest Hardware Technology Trends (*Practical Contents including Hands-on), Understanding of Latest Middleware Technology Trends, Understanding of Latest Platform Technology Trends, Understanding of Latest Network Technology Trends, Understanding of Latest Database Technology Trends, Understanding of Latest Security Technology Trends, Understanding of Latest System Management Technology Trends -Latest Trends in IT Market Understanding of IT Market Scale and Trends Domestic and Abroad, Understanding (and Utilization) of Technology Trends Related to Applications, Understanding (and Utilization) of Technology Trends Related to Business Model Patents, Understanding (and Utilization) of Next-generation E-business and its Future Growth

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Industry Application Trends (1 course)

●Industry Application Trends

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Course Name / Content	Industry Application Trends
Training Course Level	☐Introductory Course ☐Basic Course ☐Advanced Course ■Special Course
Training Area (Common or Specialty Field)	■Common to IT Specialist ☐Platform ☐System Management ☐Database ☐Common Application Infrastructure ☐Network ☐Security
Outline	Aim: Attendees learn the latest trends in each industry and acquire knowledge of applications and solutions in the spotlight in order to keep updating knowledge of industry applications changing from day to day. ○Training contents are provided on a given theme of each industry, application, or solution, and the attendees select a theme and take part in a lecture for maintaining or improving their skills at regular intervals or when needed. ○To provide lectures via e-learning type methods is possible; however, to give demonstrations of how applications work at lectures is recommended.
Attendee	Those who should keep up with the latest knowledge including industries that the professionals are working for currently or in the future and application packages utilized in the industries as persons responsible for, leaders of, or members of technical teams (those who aim to acquire the knowledge of IT Specialist level 4, 5, or 6)
Precondition	Possess fundamental knowledge of industry applications.
Training Method	Lecture or E-learning
Duration	Standard term: 2 days (classroom) or Standard term:12 hours (e-learning 6 hours/day x 2 days)
Learning Goal	Can participate in projects such as system design, system development, system architecture, system operations, and system maintenance as a person responsible for or a leader of a technical team by utilizing industry applications knowledge.

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Skill Items	Knowledge Items
Analysis of Business Operations	-General Business Contents General Business Contents, Understanding and Utilization of Characteristics, Understanding and Utilization of Industry-specific Standard Technology -Industry Knowledge Knowledge Utilization of Industry Specific Applications, Industry Business Trends and Technology Trends and Understanding of Competition Status, Understanding and Utilization of Industry Terms and Relevant Regulations, Understanding and Utilization of Industry Specific Business Environment, Understanding and Utilization of Industry Specific Business Practice, Understanding and Utilization of Industry Specific Business Contents, Knowledge Utilization of Industry Common Applications

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Latest Business Trends (1 course)

●Latest Business Trends

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Course Name / Content	Latest Business Trends
Training Course Level	☐Introductory Course ☐Basic Course ☐Advanced Course ■Special Course
Training Area (Common or Specialty Field)	■Common to IT Specialist ☐Platform ☐System Management ☐Database ☐Common Application Infrastructure ☐Network ☐Security
Outline	Aim: Attendees acquire knowledge of the latest business trends. ○Training contents are provided on given themes (e.g., management issues of major industries, topics, IT market trends in a domestic country and abroad, and utilization of IT in business) according to need, and the attendees select a theme to take part in a lecture (or via e-learning) for maintaining or improving their skills at regular intervals or when needed.
Attendee	Those who should keep up with their business trend knowledge in order to understand business environment of customers relevant to projects as persons responsible for, leaders of, or members of technical teams (those who aim to acquire the knowledge of IT Specialist level 4, 5, or 6)
Precondition	Have completed Industry Business Operations Knowledge Fundamentals course group, or possess equivalent knowledge.
Training Method	Lecture or E-learning
Duration	Standard term: 0.5 day (classroom) or Standard term: 3 hours (e-learning 6 hours/day x 0.5 day)
Learning Goal	Can understand business issues of a customer as a person responsible for or a leader of a technical team by utilizing knowledge of the latest business trends.

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Skill Items	Knowledge Items
Technology	-Latest Technology Trends Understanding of IT Market Scale and Trends Domestic and Abroad, Understanding (and Utilization) of Technology Trends Related to Applications, Understanding (and Utilization) of Technology Trends Related to Business Model Patents, Understanding (and Utilization) of Next-generation E-business and its Future Growth

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Community Activities (1 course)

●Community Activities

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Course Name / Content	Community Activities
Training Course Level	☐Introductory Course ☐Basic Course ☐Advanced Course ■Special Course
Training Area (Common or Specialty Field)	■Common to IT Specialist ☐Platform ☐System Management ☐Database ☐Common Application Infrastructure ☐Network ☐Security
Outline	Aim: Community activities, unlike trainings, give IT professionals opportunities to learn from one other and contribute to development of subordinates. Community activities are all sorts of activities within or outside companies regardless of any types of organizations. Community activities outside companies are activities in academic conferences or various associations (including voluntary ones), and community activities within companies are, for instance, activities by those certified by certification system in their companies. Basically, a community is made up of one job category. ○Individuals with high-level skills are considered out of learning through trainings, and they are expected to improve their skills by exchanging information and discussing with other individuals in community activities. ○The individuals contribute to development of subordinates through writing a paper or giving lectures based on their high-level knowledge and skills. Especially in community activities within companies, they lead activities for design, institution, and implementation of personnel system, education system, and training system. They make contribution as IT professionals in business fields to pursuit of human resource development strategies related to business strategies as well.
Attendee	- -
Precondition	- -
Training Method	- -
Duration	- -
Learning Goal	- -

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IT Specialist

Training Course Description

<Specific to Each Specialty Field (Selective Courses)>

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Platform Development Exercises (1 course)

[ ] is a corresponding specialty field

●Platform Development Exercises to Each Service [Platform]

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Course Name / Content	Platform Development Exercises to Each Service
Training Course Level	☐Introductory Course ■Basic Course ☐Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	☐Common to IT Specialist ■Platform ☐System Management ☐Database ☐Common Application Infrastructure ☐Network ☐Security
Outline	Aim: Attendees understand platform development procedure through exercises in development and installation of platforms. The attendees perform exercises in development of platforms to each service and installation type. -Service: business operations application servers, database servers, WEB servers, etc. -Installation Type: new installation, migration from existing systems to new systems ○Platform development ○Platform tests ○Creation of installation reports
Attendee	Those who aim to acquire the knowledge of IT Specialist (Platform) level 3
Precondition	Have completed System Development Fundamentals course group, or possess equivalent skills.
Training Method	Lecture, Workshop
Duration	Standard term: 3 days (classroom)
Learning Goal	Can develop a platform as a member of a technical team by utilizing fundamental skills of platform development.

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Skill Items	Knowledge Items
Platform System Architecture	-Platform Architecture Technology Product Installation Technology, Architecture Parameter Setup, Test Techniques for Platform Architecture -System Migration System Migration Tests, System Migration

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Platform Design (1 course)

[ ] is a corresponding specialty field

●Platform Design [Platform]

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Course Name / Content	Platform Design
Training Course Level	☐Introductory Course ■Basic Course ☐Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	☐Common to IT Specialist ■Platform ☐System Management ☐Database ☐Common Application Infrastructure ☐Network ☐Security
Outline	Aim: Attendees learn design methods important for platform design based on platform requirements. The attendees learn the following design methods of platform systems ○Platform design -Design of implementation methods of non-functional requirements (availability design, performance design (sizing), etc.) -Understanding of implementation technology of non-functional requirements ○Design of backup methods and recovery methods of platform systems ○Design of platform migration ○Design of platform tests ○Installation plans
Attendee	Those who aim to acquire the knowledge of IT Specialist (Platform) level 3
Precondition	Have completed System Development Fundamentals course group and Platform Development Exercises course, or possess equivalent skills.
Training Method	Lecture, Workshop
Duration	Standard term: 3 days (classroom)
Learning Goal	Can design a platform as a member of a technical team by utilizing fundamental skills and knowledge of platform design.

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Skill Items	Knowledge Items
Platform System Architecture	-Platform Design Techniques Availability Design, Performance Design, Expandability Design, Security Design (User Design, Authorization Design), Capacity Design -Platform Implementation Technology Architecture Parameter Design (Hardware, OS, Middleware, etc.), Architecture Working Design (Architecture Procedure Design, Work Instruction Preparation, etc.), Platform Test Design (Test Case Preparation, Work Instruction Preparation, etc.) -System Migration Design System Migration Design, Preparation of System Migration Tests
Database System Architecture	-Database Operation Design Backup/Restore Methods, Database Control Methods

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Platform Requirements Definition (1 course)

[ ] is a corresponding specialty field

●Platform Requirements Definition [Platform]

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Course Name / Content	Platform Requirements Definition
Training Course Level	☐Introductory Course ☐Basic Course ■Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	☐Common to IT Specialist ■Platform ☐System Management ☐Database ☐Common Application Infrastructure ☐Network ☐Security
Outline	Aim: This course helps attendees learn requirements necessary to be implemented in platforms, and acquire skills of how to define them. Attendees learn techniques of requirements definition of platform system architecture. They also acquire skills of extraction of platform requirements from system requirements and business operations requirements, and how to define the platform requirements. ○Understanding of system non-functional requirements ○Understanding of techniques of platform requirements definition
Attendee	Those who aim to acquire the knowledge of IT Specialist (Platform) level 4
Precondition	Have completed System Development Fundamentals course groups, Platform Development Exercises course, and Platform Design course, or possess equivalent skills.
Training Method	Lecture, Workshop
Duration	Standard term: 3 days (classroom)
Learning Goal	Can define platform requirements as a leader of a technical team based on understanding of platform requirements and by utilizing necessary skills.

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Skill Items	Knowledge Items
Platform System Architecture	-Platform Requirement Definition Techniques Availability Requirements, Performance Requirements, Expandability Requirements, Security Requirement (User Definition, Authority Definition), Capacity Requirements

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Availability Design (1 course)

[ ] is a corresponding specialty field

●Availability Design [Platform]

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Course Name / Content	Availability Design
Training Course Level	☐Introductory Course ☐Basic Course ■Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	☐Common to IT Specialist ■Platform ☐System Management ☐Database ☐Common Application Infrastructure ☐Network ☐Security
Outline	Aim: This course helps attendees deepen understanding of system reliability in platform design processes, and acquire skills necessary for availability design through exercises. Attendees enrich their understanding of system reliability, and acquire knowledge of high availability technology and availability design skills utilizing the high availability technology. ○System reliability and failures ○Availability requirements definition ○Availability design and availability technology
Attendee	Those who aim to acquire the knowledge of IT Specialist level 4
Precondition	Have completed System Development Fundamentals course group, Platform Development Exercises course, and Platform Architecture Exercises course, or possess equivalent skills.
Training Method	Lecture, Workshop
Duration	Standard term: 3 days (classroom)
Learning Goal	Can design system availability as a leader of a technical team by utilizing skills of system availability design.

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Skill Items	Knowledge Items
Platform System Architecture	-System Architecture Design Methods Reliability Enabling Technology, Performance Design Technology (Performance and Capacity Related Design Technology and Estimating Technology), System Architecture Design Technology -Platform Requirement Definition Techniques Availability Requirements, Performance Requirements, Expandability Requirements, Security Requirement (User Definition, Authority Definition), Capacity Requirements -Platform Design Techniques Availability Design, Performance Design, Expandability Design, Security Design (User Design, Authorization Design), Capacity Design

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Performance Design (1 course)

[ ] is a corresponding specialty field

●Performance Design [Platform]

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Course Name / Content	Performance Design
Training Course Level	☐Introductory Course ☐Basic Course ■Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	☐Common to IT Specialist ■Platform ☐System Management ☐Database ☐Common Application Infrastructure ☐Network ☐Security
Outline	Aim: This course helps attendees deepen understanding of system sizing in platform design processes, and acquire skills necessary for system sizing through exercises. Attendees enrich their understanding of system performance, and also acquire performance estimation techniques and sizing skills utilizing the performance estimation techniques. ○Performance risk ○Performance requirements definition ○Performance assessment model ○System sizing and performance estimation techniques
Attendee	Those who aim to acquire the knowledge of IT Specialist (Platform) level 4
Precondition	Have completed System Development Fundamentals course group, Platform Development Exercises course, and Platform Design course, or possess equivalent skills.
Training Method	Lecture, Workshop
Duration	Standard term: 3 days (classroom)
Learning Goal	Can design system performance as a leader of a technical team by utilizing skills of system performance design.

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Skill Items	Knowledge Items
Platform System Architecture	-System Architecture Design Methods Reliability Enabling Technology, Performance Design Technology (Performance and Capacity Related Design Technology and Estimating Technology), System Architecture Design Technology -Platform Requirement Definition Techniques Availability Requirements, Performance Requirements, Expandability Requirements, Security Requirement (User Definition, Authority Definition), Capacity Requirements -Platform Design Techniques Availability Design, Performance Design, Expandability Design, Security Design (User Design, Authorization Design), Capacity Design

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Network Construction Exercises (2 courses)

[ ] is a corresponding specialty field

- Network Installation Exercises to Each Service [Network]
- Network Construction Exercises [Network]

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Course Name / Content	Network Installation Exercises to Each Service
Training Course Level	☐Introductory Course ■Basic Course ☐Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	☐Common to IT Specialist ☐Platform ☐System Management ☐Database ☐Common Application Infrastructure ■Network ☐Security
Outline	Aim: Attendees learn fundamental steps of network construction in major network services. The attendees perform exercises in installation to each network service below. LAN, wireless LAN, cabling, VoIP, remote access, network management ○An overview of network services -Basic functions -System configuration -Technology trends ○An overview of network service design -Physical design -Logical design -Reliability design -Security design -Parameter design ○Network construction exercises -Project plans -Equipment installation and equipment connection -Equipment setup -Connection tests
Attendee	Those who aim to acquire the knowledge of IT Specialist (Network) level 3
Precondition	Have completed System Development Fundamentals course group, or possess equivalent skills.
Training Method	Lecture, Workshop
Duration	Standard term: 2 days (classroom)

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Course Name / Content	Network Installation Exercises to Each Service
Training Course Level	☐Introductory Course ■Basic Course ☐Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	☐Common to IT Specialist ☐Platform ☐System Management ☐Database ☐Common Application Infrastructure ■Network ☐Security
Learning Goal	Can construct a network as a member of a technical team by utilizing fundamental skills of network construction.

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Skill Items	Knowledge Items
Network Product Utilization Technology	-Network System Technology Trends Understanding of Large Scale Networking (Broadband ISDN, Optical Networking, Telephone Cables, Wireless Networks, Backbone Networks) Technology Trends, Understanding of Hi-speed LAN (DQDB (Distributed Queue Dual Bus), Gigabit Ethernet) Technology Trends, Understanding of Communication Services (Gigabit Ethernet, Continuous Connection Services, Area IP Networks) Technology Trends -Network Product Knowledge Utilization of Network Product Knowledge, Lines, Load Balancers, Mobile Devices (PDA, Mobile Phones), L2Switches and L3Swicthes and Routers, VPN Gateways and VoIP Gateways, Wireless LAN and IPPBX and IP Telephones, Cables, Network Management Tools, Finders, Traffic Generators, Network Simulators, etc.
Network Component Related Technology	Network Standards Understanding and Application of Network Standards

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Course Name / Content	Network Construction Exercises
Training Course Level	☐Introductory Course ■Basic Course ☐Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	☐Common to IT Specialist ☐Platform ☐System Management ☐Database ☐Common Application Infrastructure ■Network ☐Security
Outline	Aim: Attendees learn how to plan network construction and how to construct network systems. ○An overview of network construction -A network life cycle -Steps of network construction ○Network construction plans -Migration plans -Equipment installation and equipment setting -Cable wiring -Equipment setup -Connection tests -Integration tests ○Network construction -Equipment installation and equipment setting -Cable wiring -Equipment setup -Connection tests -Integration tests
Attendee	Those who aim to acquire the knowledge of IT Specialist (Network) level 3
Precondition	Have completed Network Installation Exercises to Each Service course, or possess equivalent skills.
Training Method	Lecture, Workshop
Duration	Standard term: 3 days (classroom)
Learning Goal	Can develop a network system as a member of a technical team by combining network services and network products with fundamental skills of network construction.

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Skill Items	Knowledge Items
Network System Architecture	-Network System Installation and Migration Installation, Tests and Assessment, Migration, Utilization of Network Verification Tools, Problem Determination and Utilization and Practice of Troubleshooting Techniques

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Network Design (1 course)

[ ] is a corresponding specialty field

●Network Design [Network]

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Course Name / Content	Network Design
Training Course Level	☐Introductory Course ■Basic Course ☐Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	☐Common to IT Specialist ☐Platform ☐System Management ☐Database ☐Common Application Infrastructure ■Network ☐Security
Outline	Aim: Attendees master network design. ○An overview of network design -A network life cycle -Network design steps ○Network design -Physical design -Logical design -Reliability design -Security design -Parameter design ○Points on design work -Selection of products and equipment -Selection of communication services -Document quality -Project plans
Attendee	Those who aim to acquire the knowledge of IT Specialist (Network) level 3
Precondition	Have completed Network Installation Exercises to Each Service course and Network Construction Exercises course, or possess equivalent skills and knowledge.
Training Method	Lecture, Workshop
Duration	Standard term: 3 days (classroom)
Learning Goal	Can design a network as a member of a technical team by utilizing fundamental skills and knowledge of network design.

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Skill Items	Knowledge Items
Network System Architecture	-Network Design Physical Design (Topology, Lines, Node, etc.), Logical Design (Protocols, Addresses, Routing, QoS, etc.), Reliability Design Redundancy, etc.), Parameter Design, Work Procedure Documentation

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Network Maintenance and Operations (1 course)

[ ] is a corresponding specialty field

●Network Maintenance and Operations [Network]

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Course Name / Content	Network Maintenance and Operations
Training Course Level	☐Introductory Course ☐Basic Course ■Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	☐Common to IT Specialist ☐Platform ☐System Management ☐Database ☐Common Application Infrastructure ■Network ☐Security
Outline	Aim: Attendees master how to maintain and operate network systems and how to retain quality of the network systems. ○Overviews of network maintenance and network operations -Network life cycle -Steps of network maintenance and network operations ○Formulation of network maintenance and operations plans -Definition of scope -Formulation of maintenance and operations policy -Selection of operations management tools ○Implementation of maintenance and operations -Backup -Configuration management -Performance management -Failure management
Attendee	Those who aim to acquire the knowledge of IT Specialist (Network) level 4
Precondition	Have completed Network Installation Exercises to Each Service course, Network Construction Exercises course, and Network Design course, or possess equivalent skills and knowledge.
Training Method	Lecture, Workshop
Duration	Standard term: 2 days (classroom)
Learning Goal	Can maintain and operate a network system as a leader of a technical team by utilizing skills of maintenance and operations of network systems.

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Skill Items	Knowledge Items
Network System Architecture	Policies of Maintenance and Update, and Plan Creation, Implementation of Maintenance and Update, Backup and Data Recovery, Network System Configuration Management, Network System Monitoring, System Performance Analysis, Compromise Analysis and Response, Fault Analysis

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Network Requirements Definition (1 course)

[ ] is a corresponding specialty field

●Network Requirements Definition [Network]

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Course Name / Content	Network Requirements Definition
Training Course Level	☐Introductory Course ☐Basic Course ■Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	☐Common to IT Specialist ☐Platform ☐System Management ☐Database ☐Common Application Infrastructure ■Network ☐Security
Outline	Aim: This course helps attendees master of how to define network requirements. ○Overview of Network Requirements Definition -Network life cycle -Steps of requirements definition -Functional requests (business requests, operations requests) and non-functional requests (quality, restrictions) -Network related laws and regulations ○Network System Requirements Definition -Existing network system analysis -Work scope definition -Physical and logical network system configuration -QoS policy -Reliability policy -Security policy -Expandability policy
Attendee	Those who aim to acquire the knowledge of IT Specialist (Network) level 4
Precondition	Have completed Network Installation Exercises to Each Service course, Network Construction Exercises course, Network Design course, and Network Maintenance and Operations course, or possess equivalent skills and knowledge.
Training Method	Lecture, Workshop
Duration	Standard term: 3 days (classroom)
Learning Goal	Can define network requirements as a leader of a technical team by utilizing skills of network requirements definition.

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Skill Items	Knowledge Items
Network System Architecture	-Requirement Definition of Network System Application Requirement Analysis, Existing Network Systems Analysis (Traffic, Physical and Logical Composition, etc.), Work Scope Definition, Requirements Definition for Network Systems, Network related Laws and Regulations

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Database Installation Exercises (1 course)

[ ] is a corresponding specialty field

●Database Installation Exercises [Database]

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Course Name / Content	Database Installation Exercises
Training Course Level	☐Introductory Course ■Basic Course ☐Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	☐Common to IT Specialist ☐Platform ☐System Management ■Database ☐Common Application Infrastructure ☐Network ☐Security
Outline	Aim: This course focuses on specific database venders. Attendees learn fundamental operations of database installation in hands-on lab.. ○Introduction to database management systems -The attendees are provided brief explanation of what DBMS can provide and how to utilize database management tools. ○Introduction to database operations -The attendees learn fundamental methods of databases (e.g., database creation, table creation, and index creation) through exercises. ○Application of database installation -The attendees learn and perform exercises in several items required for installation of databases (e.g., data migration and writing of database creation scripts).
Attendee	Those who aim to acquire the knowledge of IT Specialist (Database) level 3
Precondition	Have completed System Development Fundamentals course group, or possess equivalent skills.
Training Method	Lecture, Workshop
Duration	Standard term: 3 days (classroom)
Learning Goal	Can install a database of an information system as a member of a technical team.

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Skill Items	Knowledge Items
Database System Architecture	-Implementation and Tests to Database Management System (DBMS) Database Creation, Table Creation, Index Creation, View Creation, Authorization Setting, Creation of Data Migration Tools and Data Load, Database Architecture Script Creation, Tests and Assessment
Utilization Technology of Database Product	-Utilization Technology of Database Related Product Database Management Systems, Database Management Tools, Backup Tools, Database Monitoring Tools, Database Tuning Tools, Database Access API (JDBC, ODBC, DAO, etc.), Transaction Monitor, Database Security Tools, Modeling Tools, ETL Tools, BI Tools, Database Duplication Tools, Job Management Tools
Database Component Related Technology	-SQL DDL, DML, DCL, Database Definition, Retrieval, Conditional Retrieval and Connection, Data Manipulation (Insert, Update, Delete), Locks, Integrity Restrictions, View, Trigger, Procedure, Cursor, Embedded SQL, Dynamic SQL

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Database Design Exercises (1 course)

[ ] is a corresponding specialty field

●Database Design Exercises [Database]

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Course Name / Content	Database Design Exercises
Training Course Level	☐Introductory Course ■Basic Course ☐Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	☐Common to IT Specialist ☐Platform ☐System Management ■Database ☐Common Application Infrastructure ☐Network ☐Security
Outline	Aim: Attendees learn fundamental process of database design in lectures and by performing exercises. ○Introduction to database design -After learning in lectures design items and points on the design items, both of which are required in database installation, the attendees perform exercises in provided assignments of database design. ○Database related component technology -The attendees acquire important knowledge of components technology relevant to database design. ○Database migration design -The attendees are provided specific explanation of design methods of database migration, which is essential in development of most information systems, and the attendees perform exercises in part of design items of database migration. ○Database operations design -The attendees are provided specific explanation of backup/restore methods and database control methods, both of which are especially significant in database operations design, and the attendees perform exercises in part of design items of the backup/restore methods and database control methods.
Attendee	Those who aim to acquire the knowledge of IT Specialist (Database) level 3
Precondition	Have completed System Development Fundamentals course group and Database Installation Exercises course, or possess equivalent skills.
Training Method	Lecture, Workshop
Duration	Standard term: 4 days (classroom)
Learning Goal	Can perform entire design of a database of a information system as a member of a technical team.

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Skill Items	Knowledge Items
Database System Architecture	- Physical Database Design Technology Table Design, Index Design, Denormalization, Data Physical Deployment Design, Database Log Design, Data Capacity Design, Data Storage Area Design, Memory Cache Design, Database Security Design, Character Code Design, DBMS Configuration Parameter Design -Data Migration Design Data Migration Design, Preparation of Data Migration Tests -Database Operation Design Backup/Restore Methods, Database Control Methods
Database Component Related Technology	-Significant Technology of Database Development Distributed Databases, Database Security (Access Control / SQL Injection), Japanese Character Code System / Fonts / Code Conversion / Extended Characters, Storage Utilization Technology, File System Utilization Technology, ANSI / X3 / SPARC 3-Layer Schema

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Database Operations and Quality Improvement Techniques (1 course)

[ ] is a corresponding specialty field

●Database Operations and Quality Improvement Techniques [Database]

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Course Name / Content	Database Operations and Quality Improvement Techniques
Training Course Level	☐Introductory Course ☐Basic Course ■Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	☐Common to IT Specialist ☐Platform ☐System Management ■Database ☐Common Application Infrastructure ☐Network ☐Security
Outline	Aim: This course helps IT Specialists whose specialty field is Database acquire skills of database operations and database quality management. ○Backup operations -Attendees learn operations techniques relevant to backup management, restore management, and transaction management of databases. ○Database monitoring -The attendees learn how to conduct database health check and how to monitor database performance by utilizing monitoring tools. ○Database tuning -The attendees learn specific methods of database performance tuning. ○Others -The attendees learn important practical skills of database operations such as database reconfiguration and patch application.
Attendee	Those who aim to acquire the knowledge of IT Specialist (Database) level 4 Especially those who are involved in implemented database operations
Precondition	Have completed System Development Fundamentals course group, Database Installation Exercises course, and Database Design Exercises course, or possess equivalent skills.
Training Method	Lecture, Workshop
Duration	Standard term: 4 days (classroom)
Learning Goal	Can operate a database management system and manage its quality as a leader of a technical team.

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Skill Items	Knowledge Items
Database System Architecture	-Transaction Design Technology Transaction Definition (ACID Characteristics, Commit/Roll Back), Transaction Concurrency Control (Isolation Level, Locks), Transaction Recovery (Transaction Log Design) -Database Operation Technology Backup/Restore, Database Reconfiguration/Statistical Information Acquisition, Performance Monitoring -Database Operation Design Patch Application, Version-up Methods
Utilization Technology of Database Product	-Utilization Technology of Database Related Product Database Management Systems, Database Management Tools, Backup Tools, Database Monitoring Tools, Database Tuning Tools, Database Access API (JDBC, ODBC, DAO, etc.), Transaction Monitor, Database Security Tools, Modeling Tools, ETL Tools, BI Tools, Database Duplication Tools, Job Management Tools
Database Component Related Technology	-Database Diagnostic Techniques and Tuning Techniques Database Analysis Techniques (OS Resource Usage, DBMS Resource Usage), Database Tuning Technology (Resource Adjustment, SQL Tuning)

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Database Requirements Definition (1 course)

[ ] is a corresponding specialty field

●Database Requirements Definition [Database]

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Course Name / Content	Database Requirements Definition
Training Course Level	☐Introductory Course ☐Basic Course ■Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	☐Common to IT Specialist ☐Platform ☐System Management ■Database ☐Common Application Infrastructure ☐Network ☐Security
Outline	Aim: This course helps attendees learn how to define requirements necessary in database design through case studies. Attendees also acquire data modeling techniques important in an upper process of database design. ○Current Situation Survey and Issue Analysis -Through case studies, a description of how to analyze current situation with focus on database design is provided. ○Requirements Definition of Database Design -An explanation of requirements definition with focus on infrastructural requirements definition is offered. ○Requirements Definition of Database Operations Management -The attendees learn through exercises in how to define requirement with focus on backup, performance, and capacity, which are significant operations requirements. ○Data Modeling Techniques -Explanations with specific examples of how to maintain data dictionaries and how to implement a conceptual data model through exercises are offered.
Attendee	Those who aim to acquire the knowledge of IT Specialist (Database) level 4
Precondition	Have completed System Development Fundamentals course group, Database Installation Exercises course, and Database Design Exercises course, or possess equivalent skills.
Training Method	Lecture, Workshop
Duration	Standard term: 3 days (classroom)
Learning Goal	Can define requirements of a database of an information system and do data modeling as a leader of a technical team.

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Skill Items	Knowledge Items
Database System Architecture	-Database Requirement Definition Current Situation Survey and Issue Analysis, Database Design Requirement Definition, Definition of Database Operations Management Requirements -Logical Database Design Technology ER Design, Normalization, Key Design, Table Design, Index Design, View Design, Integrity Restrictions, Data Dictionary and Repository and Management

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Advanced Database Design (1 course)

[ ] is a corresponding specialty field

●Advanced Database Design [Database]

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Course Name / Content	Advanced Database Design
Training Course Level	☐Introductory Course ☐Basic Course ■Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	☐Common to IT Specialist ☐Platform ☐System Management ■Database ☐Common Application Infrastructure ☐Network ☐Security
Outline	Aim: This course helps attendees learn database design items, which require advanced skills, in perspectives of business operations and infrastructure. ○Physical Database Design Technology -Based on actual cases, explanations of denormalization and data physical deployment design that are important techniques in advanced physical database design are offered. Attendees also perform exercises in the denormalization and data physical deployment design. ○Reliability Design of Database Systems -The attendees learn in lectures high availability design and disaster prevention design, both of which are advanced techniques in database infrastructure design. The attendees also acquire practical techniques related to high availability design and disaster prevention design through exercises. ○Database Related Technology Trends -The attendees acquire techniques and the latest techniques (e.g., data warehouse, OLAP, data mining, and XML database) that utilize characteristics of databases.
Attendee	Those who aim to acquire the knowledge of IT Specialist (Database) level 4
Precondition	Have completed System Development Fundamentals course group, Database Installation Exercises course, and Database Design Exercises course, or possess equivalent skills.
Training Method	Lecture, Workshop
Duration	Standard term: 3 days (classroom)
Learning Goal	Can design an advanced and complete database as a leader of a technical team.

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Skill Items	Knowledge Items
Database System Architecture	-Physical Database Design Technology Table Design, Index Design, Denormalization, Data Physical Deployment Design, Database Log Design, Data Capacity Design, Data Storage Area Design, Memory Cache Design, Database Security Design, Character Code Design, DBMS Configuration Parameter Design -Reliability Design of Database System Database High Availability Design, Database Disaster Prevention Design
Database Component Related Technology	-SQL DDL, DML, DCL, Database Definition, Retrieval, Conditional Retrieval and Connection, Data Manipulation (Insert, Update, Delete), Locks, Integrity Restrictions, View, Trigger, Procedure, Cursor, Embedded SQL, Dynamic SQL -Database Related Technology Trends Object-oriented Databases, Object Relational Databases, XML Databases and X Query and X Path, Data Warehouses and OLAP and Data Mining

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Exercises in Utilization of Common Application Infrastructure (1 course)

[ ] is a corresponding specialty field

●Exercises in Utilization of Common Application Infrastructure

[Common Application Infrastructure]

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Course Name / Content	Exercises in Utilization of Common Application Infrastructure
Training Course Level	☐Introductory Course ■Basic Course ☐Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	☐Common to IT Specialist ☐Platform ☐System Management ☐Database ■Common Application Infrastructure ☐Network ☐Security
Outline	Aim: Attendees learn through lectures and exercises an overview and roles of common application infrastructure, especially fundamental knowledge of and how to use frameworks that play a key role in common application infrastructure. ○Common application infrastructure The attendees learn common application infrastructure, especially roles and importance of the frameworks and relation between the frameworks and application development. ○Common application infrastructure and component techniques in utilization of the application common infrastructure The attendees learn concepts of significant elemental component technology (MVC, DI, AOP, O/R Mapping) for preparation and utilization of common application infrastructure. ○OSS The attendees learn OSS, often utilized for preparation of common application infrastructure, including its advantages, its points to remember, its relevant topics (communities, licenses, and surrounding business), and its major products. ○Utilization and setup of products The attendees learn common application infrastructure, especially major products utilized as frameworks, and how to use and combine the products.
Attendee	Those who aim to acquire the knowledge of IT Specialist (Common Application Infrastructure) level 3
Precondition	Possess the knowledge of IT Specialist level 2, or possess equivalent skills.
Training Method	E-learning, Lecture, Workshop
Duration	[First Half] Standard term: 18 hours (e-learning 6 hours/day x 3 days) [Second Half] Standard term: 3 days (classroom)
Learning Goal	Can install and setup major frameworks and develop applications that utilize the major frameworks by utilizing fundamental knowledge of application infrastructure, framework, and component technology (e.g., DI and AOP) as a member of a technical team.

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Skill Items	Knowledge Items
Common Application Infrastructure Component Related Technology	-Object-oriented Techniques Object-oriented Development Techniques, Object-oriented Languages -Framework Component Techniques MVC Models, OR Mapping, DI (Dependency Injection), AOP (Aspect-oriented Programming), OSS (Open Sources Software)

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Design and Development of Common Application Infrastructure (1 course)

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●Design and Development of Application common infrastructure

[Application common infrastructure]

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Course Name / Content	Design and Development of Common Application Infrastructure
Training Course Level	☐Introductory Course ■Basic Course ☐Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	☐Common to IT Specialist ☐Platform ☐System Management ☐Database ■Common Application Infrastructure ☐Network ☐Security
Outline	Aim: This is one of the courses in System Development course group, which is the subsequent of System Development Fundamentals course group. Attendees acquire knowledge of design and development of common application infrastructure through learning fundamental techniques of and performing practical exercises in application frameworks. ○Application of UML The attendees learn how to design common application infrastructure by utilizing UML (class diagram, sequence diagram, state machine diagram, etc.). ○Object-oriented design The attendees learn class design that utilize characteristics of object oriented paradigm (inheritance, encapsulation, interface, polymorphism), and how to design responsibilities of a class clearly. ○Design patterns and design principles The attendees learn major object-oriented design patterns and design principles (Gang of Four, Design by Contract, Open/Closed Principle, etc.). ○Screen framework design The attendees learn how to implement common functions (e.g., session management, session authentication, and session logs) based on MVC frameworks, and how to unify a screen design by partitioning. ○O/R mapping design The attendees learn association methods of data structure with objects by utilizing O/R mapping, and points on design of O/R mapping from performance and security perspectives.

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Course Name / Content	Design and Development of Common Application Infrastructure
Training Course Level	☐Introductory Course ■Basic Course ☐Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	☐Common to IT Specialist ☐Platform ☐System Management ☐Database ■Common Application Infrastructure ☐Network ☐Security
	○Design by AOP and DI The attendees learn how to design classes for security and maintainability by utilizing AOP and DI. ○Common function design The attendees learn how to extract common functions from system requirements, and how to design and implement common system components. ○Security of common application infrastructure The attendees learn methods of design and implementation of application infrastructure for decreasing vulnerability (cross site scripting, SQL injection) in applications, and methods of data protection by encryption and digest. ○Environment setup of common application infrastructure The attendees learn how to setup development environment and execution environment for utilizing common application infrastructure.
Attendee	Those who aim to acquire the knowledge of IT Specialist (Common Application Infrastructure) level 3
Precondition	Have completed Exercises in Utilization of Common Application Infrastructure course, or possess equivalent knowledge.
Training Method	E-learning, Lecture, Workshop
Duration	[First Half] Standard term: 18 hours (e-learning 6 hours/day x 3days) [Second Half] Standard term: 3 days (classroom)
Learning Goal	Can promote development of an application by supporting a developer to be able to develop the application based on common application infrastructure by designing the common application infrastructure by utilizing knowledge of functions and design of common application infrastructure as a leader of a technical team.

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Skill Items	Knowledge Items
Common Application Infrastructure System Architecture	-Application Method Design Techniques Common Function Design (User Authentication, Application Log Design, etc.), Object Design, Development Standardization Techniques (Design, Coding, Tests), Test Techniques -Common Application Infrastructure Design Techniques Availability Design, Performance Design, Expandability Design, Security Design, Other System Linkage Interface Design, Transaction Design, Database Access Design, Application Maintenance Design, Framework Expansion Design, Common Library Design
Common Application Infrastructure Component Related Technology	-Object-oriented Techniques UML, Object-oriented Design Techniques, Object-oriented Development Techniques, Object-oriented Languages, Design Patterns, Component Design Technology -Framework Component Techniques MVC Models, OR Mapping, DI (Dependency Injection), AOP (Aspect-oriented Programming), OSS (Open Sources Software)

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Development Tools Utilization and Environment Setup (1 course)

[ ] is a corresponding specialty field

●Development Tools Utilization and Environment Setup

[Common Application Infrastructure]

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Course Name / Content	Development Tools Utilization and Environment Setup
Training Course Level	☐Introductory Course ■Basic Course ☐Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	☐Common to IT Specialist ☐Platform ☐System Management ☐Database ■Common Application Infrastructure ☐Network ☐Security
Outline	Aim: Attendees deepen understanding of functions of development tools to be utilized in application development processes, and acquire skills of tool environment setup, tool environment operations, and design of non-functional test methods. ○Utilization of development tools The attendees learn functions of development tools (e.g., integrated development environment, unit test, static code analysis, performance analysis, and memory analysis) to be utilized in each application development process, and how to use the tools effectively. ○Environment setup for configuration management and change control The attendees learn significance of configuration management and change control, and how to setup and operate environment for the configuration management and change control. ○Test environment setup The attendees learn how to develop test methods and how to setup test environment, both of which are required in and after joint tests (e.g., continuous integration, regression tests, stress tests, and security tests).
Attendee	Those who aim to acquire the knowledge of IT Specialist (Common Application Infrastructure) level 3
Precondition	Have completed System Development Fundamentals course group and Exercises in System Infrastructure Development course, or possess equivalent skills.
Training Method	Lecture, Workshop
Duration	Standard term: 3 days (classroom)
Learning Goal	Can setup tool environment, operate the tool environment, and teach how to utilize development tools as a member of a technical team by utilizing fundamental knowledge of the development tools.

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Skill Items	Knowledge Items
Common Application Infrastructure System Architecture	-Application Method Design Techniques Development Standardization (Design, Coding, Test), Test Method, Configuration and Change Control Techniques

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Common Application Infrastructure Design - Advanced Level - (1 course)

[ ] is a corresponding specialty field

●Common Application Infrastructure Design - Advanced Level -

[Common Application Infrastructure]

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Course Name / Content	Common Application Infrastructure Design - Advanced Level -
Training Course Level	☐Introductory Course ☐Basic Course ■Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	☐Common to IT Specialist ☐Platform ☐System Management ☐Database ■Common Application Infrastructure ☐Network ☐Security
Outline	Aim: Attendees acquire knowledge of methods and technology for requirements definition and design of common application infrastructure. The attendees also acquire skills to develop common application infrastructure independently through exercises. ○Refactoring The attendees learn how to improve quality (e.g., expandability and maintainability) of the common infrastructure while ensuring user interface compatibility of the common infrastructure. ○Separation of application from common infrastructure The attendees learn influence on applications when the common infrastructure is utilized directly, and how to utilize the common infrastructure indirectly. ○Linkage component techniques among systems The attendees learn various types of communications mechanisms (WEB service, COBRA, messaging techniques, etc.) and data formats (including character code), both of which are. related to linkage among systems. ○Application architecture The attendees learn techniques and patterns, such as hierarchical structured design for screen processing, operations processing, and database processing, for entire application framework. The design patens are classified in Pattern-Oriented Software Architecture. ○Types and selection of frameworks The attendees understand architecture and scope that a framework depends on, and learn how to assess and select a framework based on requirements and issues. ○Design of availability, performance, and security

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Course Name / Content	Common Application Infrastructure Design - Advanced Level -
Training Course Level	☐Introductory Course ☐Basic Course ■Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	☐Common to IT Specialist ☐Platform ☐System Management ☐Database ■Common Application Infrastructure ☐Network ☐Security
	The attendees learn how to design common application infrastructure to fulfill performance and security requirements, and to meet scheduled downtime requirements for application maintenance. ○Transaction management design The attendees learn two-phase commit or other transaction design methods in distributed database environment.
Attendee	Those who aim to acquire the knowledge of IT Specialist (Common Application Infrastructure) level 4
Precondition	Have completed Exercises in Utilization of Common Application Infrastructure course, Design and Development of Common Application Infrastructure course, and Development Tools Utilization and Environment Setup course, or possess equivalent skills.
Training Method	E-learning, Lecture, Workshop
Duration	[First Half] Standard term: 18 hours (e-learning 6 hours/day x 3 days) [Second Half] Standard term: 2 days (classroom)
Learning Goal	Can lead activities for requirements definition and design of common application infrastructure as a leader of a technical team by utilizing practical skills of functions and design of common application infrastructure.

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Skill Items	Knowledge Items
Establishment of Common Application Infrastructure System	-Requirement Definition Techniques of Common Application Infrastructure Expandability Requirement, Availability Requirement and Design, Performance Requirement, Security Requirement, Other System Linkage Interface Requirement, Transaction Requirement, Database Access Requirement, Application Maintenance Requirement -Common Application Infrastructure Design Techniques Expandability Design, Availability Design, Performance Design, Security Design, Other System Linkage Interface Design, Transaction Management Design, Database Access Design, Application Maintenance Design, Framework Expansion Design, Common Library Design -Application Method Design Techniques Linkage Design among Systems, Object Design, Framework Design and Assessment Techniques, Development Standardization Techniques (Design, Coding, Test), Test Techniques
Common Application Infrastructure Component Related Technology	-Framework Component Techniques MVC Models, OR Mapping, DI (Dependency Injection), AOP (Aspect-oriented Programming), OSS (Open Sources Software) -Linkage Techniques among Systems Distributed Programming, Transaction Management, 2-phase Commit, Messaging Techniques, XML, WEB Services
Platform Component Related Technology	-Middleware Technology Database Management Systems, Transaction-processing Techniques, System Linkage Technology (Messaging, File Exchange, etc.), Distributed Processing Technology, Parallel Processing Technology
Database System Architecture	-Transaction Design Technology Transaction Definition (ACID Characteristics, Commit/Roll Back), Transaction Concurrency Control (Isolation Level, Locks), Transaction Recovery (Transaction Log Design)
Database Component Related Technology	-Significant Technology of Database Development Distributed Databases, Database Security (Access Control / SQL Injection), Japanese Character Code System / Fonts / Code Conversion / Extended Characters
Security Component Related Technology	-Security Technique Trends Single Sign-on, PKI, Encryption, Electronic Signature

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Application Development Methods and Their Standardization (1 course)

[ ] is a corresponding specialty field

●Application Development Methods and Their Standardization

[Common Application Infrastructure]

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Course Name / Content	Application Development Methods and Standardization
Training Course Level	☐Introductory Course ☐Basic Course ■Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	☐Common to IT Specialist ☐Platform ☐System Management ☐Database ■Common Application Infrastructure ☐Network ☐Security
Outline	Aim: Attendees learn scopes, overviews and process of standardization for methods and tools in common application infrastructure during application development. The attendees learn how to select tools in common application infrastructure for the application development. ○Common infrastructure and milestones The attendees learn important operations that professionals whose specialty field is common application infrastructure have to perform as their roles in the application development process. -Operations and deliverables of the common application infrastructure -Correlation between application development operations and the deliverables -What and how to set milestones towards release for the deliverables of the common application infrastructure ○Development standardization techniques The attendees learn items need to be standardized as the common infrastructure in application development. -Items to be standardized in design processes, development processes, and testing processes, how to describe contents of the items -Governance of the standardized items ○Design of development steps The attendees acquire skills to optimize application development steps (from design to testing) in accordance with each development process or system configuration. -Necessary deliverables, how to create the deliverables, input deliverables, output deliverables, and tools to be utilized in the application development -Structured analysis design, object-oriented analysis design, legacy migration development, and test-driven development -Modeling tools, code development tools, testing tools, static code analysis tools, and program language conversion tools -Arrangement of the development steps in accordance with dependency among developers, and points on elimination and

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Course Name / Content	Application Development Methods and Standardization
Training Course Level	☐Introductory Course ☐Basic Course ■Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	☐Common to IT Specialist ☐Platform ☐System Management ☐Database ■Common Application Infrastructure ☐Network ☐Security
	consolidation of the development steps based on purposes -Ensuring of traceability among deliverables (requirements ↔ specifications ↔ tests) ○Techniques for development tool assessment The attendees learn tips and tricks to select appropriate tolls in application development. -Coding tools, test tools, configuration management tools
Attendee	Those who aim to acquire the knowledge of IT Specialist (Common Application Infrastructure) level 4
Precondition	Have completed Design and Development of Common Application Infrastructure course and Development Tools Utilization and Environment Setup course, or possess equivalent knowledge.
Training Method	Lecture, Workshop
Duration	Standard term: 4 days (classroom)
Learning Goal	Can utilize practical skills and lead common application infrastructure development activities as a technical team leader who is responsible to plan and accomplish the following activities. - Creation of application development steps - Standardization of application development - Selection of tools

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Skill Items	Knowledge Items
Establishment of Common Application Infrastructure System	-Application Method Design Techniques Linkage Design among Systems, Object Design, Development Tools Assessment Techniques, Development Standardization Techniques (Design, Coding, Tests), Test Techniques, Techniques for Configuration Management and Change Control
Common Application Infrastructure Component Related Technology	-Object-oriented Techniques UML, Object-oriented Design Techniques, Object-oriented Development Techniques, Object-oriented Languages, Design Patterns, Component Design Technology -Framework Component Techniques MVC Models, OR Mapping, DI (Dependency Injection), AOP (Aspect-oriented Programming -Legacy Migration Techniques Utilization Techniques of Static Code Analysis Tools, Utilization Techniques of Program Language Conversion Tools

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Exercises in Operations Management System Development (2 courses)

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- Exercises in Operations Management Software Installation [System Management]
- Operations Management System Development [System Management]

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Course Name / Content	Exercises in Operations Management Software Installation
Training Course Level	☐Introductory Course ■Basic Course ☐Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	☐Common to IT Specialist ☐Platform ■System Management ☐Database ☐Common Application Infrastructure ☐Network ☐Security
Outline	Aim: This is a fundamental course in system management. Attendees learn major functions of operations management software and understand its installation steps. This course is designed to develop IT professionals to be able to install operations management software of information systems. The attendees learn the major functions of operations management software and its installation steps. ○An overview of operations management software and its installation steps A flow of entire operations ○Understanding of functions of operations management software products ○Installation steps ○Tests and how to validate
Attendee	Those who aim to acquire the knowledge of IT Specialist (System Management) level 3
Precondition	Have completed System Development Fundamentals course group, or possess equivalent knowledge Possess knowledge of products (platforms, hardware, operating systems) and an overview of a product (databases).
Training Method	Lecture, Workshop
Duration	Standard term: 3 days (classroom)
Learning Goal	Can install operations management software as a member of a technical team by utilizing major functions of operations management software.

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Skill Items	Knowledge Items
Platform System Architecture	-System Architecture Design Methods Reliability Enabling Technology, Performance Design Technology (Performance and Capacity Related Design Technology and Estimating Technology), System Architecture Design Technology -Platform Requirement Definition Techniques Availability Requirements, Performance Requirements, Expandability Requirements, Security Requirement (User Definition, Authority Definition), Capacity Requirements
Platform Component Related Technology	-System Diagnostic Techniques and Failure Measure Technology System Monitoring Technology, System Analysis and Diagnostic Technology, Failure Recovery Technology
Network Component Related Technology	-Network Standards Understanding and Application of Network Standards
System Management System Architecture	-Operation Related System Assessment Analysis Techniques of System Operations Management, Assessment Techniques of System Operations Management, Risk Analysis -System Management Plan Management Policy of System Operations, Cost Estimate for System and Service Provision, Policy Decision of User Service Level, Service Desks, SLA -System Operational Method Techniques System Operational Management Methods (Job Automatic Control, etc.), Monitoring Methods (Operation Monitoring, Failure Monitoring, Performance Monitoring, Threshold Monitoring), Backup/Recovery Methods -System Operational Management Design Monitoring Methods (Operation Monitoring, Failure Monitoring, Performance Monitoring, Threshold Monitoring), Normal and Abnormal Operations Methods and Operation Flow Design, Service Level Management Design, Incident Management and Issue Management and Change Control Process Design, Backup/Recovery Methods, Job Net Management Methods, Architecture of Log Rotation and Backup and Switching, Creation of Shell Scripts

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Skill Items	Knowledge Items
System Management Component Related Technology	-Service Delivery Service Level Management (including Performance Management), Financial Management for IT Services, Capacity Management, Availability Management, IT Service Continuity Management -System Operation Monitoring, Operations/Job Management, Service Delivery (System Deployment, Relocation, Change, and Operating Procedure from Start to End), Backup/Recovery, Business Operations, System Operations, Log Collection and Utilization, User Management -Contingency Planning Contingency Planning -System Investment Assessment Techniques Investment Evaluation Techniques of Information Systems
Security Component Related Technology	-Security Technique Trends Single Sign-on, PKI, Security Administration, Intrusion Prevention, Encryption, Electronic Signature, Firewall, Fortification (Hardening), Zoning -Computer Forensics (Tracking for Preservation of Evidence) Computer Forensics (Tracking for Preservation of Evidence)

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Course Name / Content	Operation Management System Development
Training Course Level	☐Introductory Course ■Basic Course ☐Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	☐Common to IT Specialist ☐Platform ■System Management ☐Database ☐Common Application Infrastructure ☐Network ☐Security
Outline	Aim: This is a fundamental course in system management and is designed to train IT professionals to be able to develop operations management systems of information systems. The attendees learn management mechanisms and setup steps of operations management systems. ○Development work of operations management systems in development processes and test processes An operations flow, migration plans, relocation plans, operations environment setup ○Development of operations systems -Decision on operations management methods Operations (e.g., job automatic control and abnormal response) -Development of monitoring mechanisms How to utilize logs and operations development -Tests of operations management systems Tests, an operations flow, operations tests, techniques of the operations tests Support for development operations Operations implementation report
Attendee	Those who aim to acquire the knowledge of IT Specialist (System Management) level 3
Precondition	Have completed Exercises in Operations Management Software Installation course, or possess equivalent knowledge.
Training Method	Lecture, Workshop
Duration	Standard term: 3 days (classroom)
Learning Goal	Can make a development plan of an operations management system and develop the operations management system as a member of a technical team by utilizing skills of operations management systems. Can create a plan of installation of operations management software and perform installation test activities.

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Skill Items	Knowledge Items
Platform System Architecture	-System Architecture Design Methods Reliability Enabling Technology, Performance Design Technology (Performance and Capacity Related Design Technology and Estimating Technology), System Architecture Design Technology -Platform Requirement Definition Techniques Availability Requirements, Performance Requirements, Expandability Requirements, Security Requirement (User Definition, Authority Definition), Capacity Requirements
Platform Component Related Technology	-System Diagnostic Techniques and Failure Measure Technology System Monitoring Technology, System Analysis and Diagnostic Technology, Failure Recovery Technology
Network Component Related Technology	-Network Standards Understanding and Application of Network Standards
System Management System Architecture	-System Management Plan Management Policy of System Operations, Cost Estimate for System and Service Provision, Policy Decision of User Service Level, Service Desks, SLA -System Operational Method Techniques System Operational Management Methods (Job Automatic Control, etc.), Monitoring Methods (Operation Monitoring, Failure Monitoring, Performance Monitoring, Threshold Monitoring), Backup/Recovery Methods -System Operational Management Design Monitoring Methods (Operation Monitoring, Failure Monitoring, Performance Monitoring, Threshold Monitoring), Normal and Abnormal Operations Methods and Operation Flow Design, Service Level Management Design, Incident Management and Issue Management and Change Control Process Design, Backup/Recovery Methods, Job Net Management Methods, Architecture of Log Rotation and Backup and Switching, Creation of Shell Scripts -System Migration System Migration Tests, System Migration

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Skill Items	Knowledge Items
System Management Component Related Technology	-Service Delivery Service Level Management (including Performance Management), Financial Management for IT Services, Capacity Management, Availability Management, IT Service Continuity Management -System Operation Monitoring, Operations/Job Management, Service Delivery (System Deployment, Relocation, Change, and Operating Procedure from Start to End), Backup/Recovery, Business Operations, System Operations, Log Collection and Utilization, User Management -Contingency Planning Contingency Planning
Security Component Related Technology	-Security Technique Trends Single Sign-on, PKI, Security Administration, Intrusion Prevention, Encryption, Electronic Signature, Firewall, Fortification (Hardening), Zoning -Security and Personal Information Security Measures, Secret Preservation, Measures for Prevention of Falsification, Intrusion Prevention, Computer Virus, Integrity Measures, Availability Measures, Safety Measures, Social Engineering, Privacy Protection, Risk Management, Guidelines and Regulations -Computer Forensics (Tracking for Preservation of Evidence) Computer Forensics (Tracking for Preservation of Evidence)

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Operation Management System Design (1 course)

[ ] is a corresponding specialty field

●Operation Management System Design [System Management]

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Course Name / Content	Operation Management System Design
Training Course Level	☐Introductory Course ■Basic Course ☐Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	☐Common to IT Specialist ☐Platform ■System Management ☐Database ☐Common Application Infrastructure ☐Network ☐Security
Outline	Aim: This course is designed to develop IT professionals to be able to design operations management systems of information systems. Attendees learn design contents, design items, and design steps of operations management work of information systems. ○Overviews of requirements definition and operations management system design -Process work flows -Fundamental knowledge of system operations management -Organization of operations requirements (operations requirements, development requirements, migration requirements) -Definition of service level requirements -Change control ○Design of system operations management -System architecture considering effective operations (selection of optimum methodologies, creation of guidance for application, standardization), design of operations flows (operations monitoring, design of operations steps for normal and abnormal information system operations) -Design of user service level management ○Points on design work -Document quality, complete task management (examples of management lists)
Attendee	Those who aim to acquire the knowledge of IT Specialist (System Management) level 3
Precondition	Have completed Operations Management System Development course, or possess equivalent knowledge.
Training Method	Lecture, Workshop
Duration	Standard term: 3 days (classroom)
Learning Goal	Can design an operations management system as a member of a technical team by utilizing fundamental skills of operations management system design.

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Skill Items	Knowledge Items
Platform Product Utilization Technology	-Product Knowledge (Platform) Hardware (Server, Storage, etc.), Operating Systems (Mainframe, Small Business Computer, Unix, Windows, Linux, etc.), Middleware (Cluster Middleware, Database Management Systems (DBMS), WEB Server, AP Server, etc.), Backup Tools, Operating Management Tools, Test Tools -Platform Technology Servers (Architecture and Operating Principle), Storage (Architecture and Operating Principle), Operating Systems (Architecture and Operating Principle), File Systems (Architecture and Operating Principle), Systems Operations Management Technology (Operating Techniques, Management Techniques, Maintenance Technology, Backup/Recovery Techniques, Disaster Recovery Technology, etc.) -Middleware Technology Database Management Systems, Transaction-processing Techniques, System Linkage Technology (Messaging, File Exchange, etc.), Distributed Processing Technology, Parallel Processing Technology -System Diagnostic Techniques and Failure Measure Technology System Monitoring Technology, System Analysis and Diagnostic Technology, Failure Recovery Technology
Network Component Related Technology	-Network Standards Understanding and Application of Network Standards
Utilization Technology of Database Product	-Utilization Technology of Database Related Product Database Management Systems, Database Management Tools, Backup Tools, Database Monitoring Tools, Database Tuning Tools, Database Access API (JDBC, ODBC, DAO, etc.), Transaction Monitor, Database Security Tools, Modeling Tools, ETL Tools, BI Tools, Database Duplication Tools, Job Management Tools

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Skill Items	Knowledge Items
System Management System Architecture	-System Operational Management Design Monitoring Methods (Operation Monitoring, Failure Monitoring, Performance Monitoring, Threshold Monitoring), Normal and Abnormal Operations Methods and Operation Flow Design, Service Level Management Design, Incident Management and Issue Management and Change Control Process Design, Backup/Recovery Methods, Job Net Management Methods, Architecture of Log Rotation and Backup and Switching, Creation of Shell Scripts -Operating System Architecture Job Automatic Control Methods, Abnormal Response, Parameter Design of Operational Management Software (Threshold Setting, etc.), Filtering Techniques of Monitoring Message (Know-how), Log Rotation, Backup, and Switching Formulations, Operations Test Techniques, Creation of Shell Scripts -System Migration Design System Migration Design, Preparation of System Migration Tests
Utilization Technology of System Management Product	-Operation Management Software Products Monitoring Tools, Job Implementation Management Tools, Remote Manipulation Tools, Distribution Tools, Information Collection Tools (Log Collection), Backup/Recovery Tools, Incident Management Tools, Facility, Equipment, Maintenance Tools, Migration Support Tools
System Management Component Related Technology	-System Operation Monitoring, Operations/Job Management, Service Delivery (System Deployment, Relocation, Change, and Operating Procedure from Start to End), Backup/Recovery, Business Operations, System Operations, Log Collection and Utilization, User Management
Security Component Related Technology	-Security and Personal Information Security Measures, Secret Preservation, Measures for Prevention of Falsification, Intrusion Prevention, Computer Virus, Integrity Measures, Availability Measures, Safety Measures, Social Engineering, Privacy Protection, Risk Management, Guidelines and Regulations -Computer Forensics (Tracking for Preservation of Evidence) Computer Forensics (Tracking for Preservation of Evidence)

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Quality and Improvement of System Operations Management (1 course)

[ ] is a corresponding specialty field

●Quality and Improvement of System Operations Management [System Management]

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Course Name / Content	Quality and Improvement of System Operations Management
Training Course Level	☐Introductory Course ☐Basic Course ■Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	☐Common to IT Specialist ☐Platform ■System Management ☐Database ☐Common Application Infrastructure ☐Network ☐Security
Outline	Aim: Attendees learn a concept of operations quality, steps of failure analysis, recovery steps, techniques for operations management, and techniques for quality management, quality evaluation, and quality improvement of the information systems to improve an information system in operation effectively. ○A concept of operations quality -Concepts of operations quality (reliability, performance) and cost, concepts of expandability and cost, concepts of target quality and quality assurance ○Assessment of information system operations - Techniques for and assessment of quality management of information system operations ○Management and improvement of information system operations -Failure and recovery Failure impact assessment and analysis, failure history management, failure identification, failure cause diagnosis, failure restoration, development of preventive measures against failure, failure recovery, planning of preventive measure activities against failure, survey associated with failure recovery and preventive measures against failure, definition of failure phenomenon, data collection, reproduction of phenomenon, and problem management tools -Information system management Utilization and practice of change control techniques -Information system improvement Hardware management, software management, data management, network management, facility management, equipment management, performance tuning

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Course Name / Content	Quality and Improvement of System Operations Management
Training Course Level	☐Introductory Course ☐Basic Course ■Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	☐Common to IT Specialist ☐Platform ■System Management ☐Database ☐Common Application Infrastructure ☐Network ☐Security
Attendee	Those who aim to acquire the knowledge of IT Specialist (System Management) level 4
Precondition	Have completed Operations Management System Design course, or possess equivalent knowledge. Have experience of designing an operations management system.
Training Method	Lecture, Workshop
Duration	Standard term: 3 days (classroom)
Learning Goal	Can improve operations management of an information system and keep high quality of the information system at the same time as a leader of a technical team.

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Skill Items	Knowledge Items
Platform Product Utilization Technology	-Product Knowledge (Platform) Hardware (Server, Storage, etc.), Operating Systems (Mainframe, Small Business Computer, Unix, Windows, Linux, etc.), Middleware (Cluster Middleware, Database Management Systems (DBMS), WEB Server, AP Server, etc.), Backup Tools, Operating Management Tools, Test Tools -Platform Technology Servers (Architecture and Operating Principle), Storage (Architecture and Operating Principle), Operating Systems (Architecture and Operating Principle), File Systems (Architecture and Operating Principle), Systems Operations Management Technology (Operating Techniques, Management Techniques, Maintenance Technology, Backup/Recovery Techniques, Disaster Recovery Technology, etc.) -Middleware Technology Database Management Systems, Transaction-processing Techniques, System Linkage Technology (Messaging, File Exchange, etc.), Distributed Processing Technology, Parallel Processing Technology -System Diagnostic Techniques and Failure Measure Technology System Monitoring Technology, System Analysis and Diagnostic Technology, Failure Recovery Technology
Network Component Related Technology	-Network Standards Understanding and Application of Network Standards
Utilization Technology of Database Product	-Utilization Technology of Database Related Product Database Management Systems, Database Management Tools, Backup Tools, Database Monitoring Tools, Database Tuning Tools, Database Access API (JDBC, ODBC, DAO, etc.), Transaction Monitor, Database Security Tools, Modeling Tools, ETL Tools, BI Tools, Database Duplication Tools, Job Management Tools
Utilization Technology of System Management Product	-Operation Management Software Products Monitoring Tools, Job Implementation Management Tools, Remote Manipulation Tools, Distribution Tools, Information Collection Tools (Log Collection), Backup/Recovery Tools, Incident Management Tools, Facility, Equipment, Maintenance Tools, Migration Support Tools
System Management Component Related Technology	-System Operation Monitoring, Operations/Job Management, Service Delivery (System Deployment, Relocation, Change, and Operating Procedure from Start to End), Backup/Recovery, Business Operations, System Operations, Log Collection and Utilization, User Management

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Skill Items	Knowledge Items
Security Component Related Technology	-Security and Personal Information Security Measures, Secret Preservation, Measures for Prevention of Falsification, Intrusion Prevention, Computer Virus, Integrity Measures, Availability Measures, Safety Measures, Social Engineering, Privacy Protection, Risk Management, Guidelines and Regulations -Computer Forensics (Tracking for Preservation of Evidence) Computer Forensics (Tracking for Preservation of Evidence)

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Requirements Definition of System Operations Management (1 course)

[ ] is a corresponding specialty field

●Requirements Definition of System Operations Management [System Management]

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Course Name / Content	Requirements Definition of System Operations Management
Training Course Level	☐Introductory Course ☐Basic Course ■Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	☐Common to IT Specialist ☐Platform ■System Management ☐Database ☐Common Application Infrastructure ☐Network ☐Security
Outline	Aim: This is a high-level course in system management and is designed to develop IT professionals to be able to organize requirements of operations work of information systems and define design items of operations management. ○An overview of requirements definition The attendees learn, -Requirements as system operations management work. -Functional requests required in information systems, and non-functional requests related to a budget, operations hours, and operations efficiency. -Functional requests (business requests, operations request) and non-functional requests (quality, performance, restrictions) ○Requirements and definition of system operations management -Contents and definition processes of requirements necessary for operations management. ○Return on investment in operations systems, expense items of the operations systems, and an overview of estimation of the expense items -How to allocate budgets for leasing and renting -Assessment techniques for information system investment ○Exercises in requirements definition
Attendee	Those who aim to acquire the knowledge of IT Specialist (System Management) level 4
Precondition	Have completed Operations Management System Design course, or possess equivalent knowledge.
Training Method	Lecture, Workshop
Duration	Standard tem: 3 days (classroom)
Learning Goal	Can analyze and define requirements of operations management work of an information system as a leader of a technical team.

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Skill Items	Knowledge Items
Platform System Architecture	-System Architecture Design Methods Reliability Enabling Technology, Performance Design Technology (Performance and Capacity Related Design Technology and Estimating Technology), System Architecture Design Technology
Platform Product Utilization Technology	-Platform Technology Servers (Architecture and Operating Principle), Storage (Architecture and Operating Principle), Operating Systems (Architecture and Operating Principle), File Systems (Architecture and Operating Principle), Systems Operations Management Technology (Operating Techniques, Management Techniques, Maintenance Technology, Backup/Recovery Techniques, Disaster Recovery Technology, etc.) -Middleware Technology Database Management Systems, Transaction-processing Techniques, System Linkage Technology (Messaging, File Exchange, etc.), Distributed Processing Technology, Parallel Processing Technology -System Diagnostic Techniques and Failure Measure Technology System Monitoring Technology, System Analysis and Diagnostic Technology, Failure Recovery Technology
Network System Architecture	-Operation, Maintenance, and Management of Network System Policies of Maintenance and Update, and Plan Creation, Implementation of Maintenance and Update, Backup and Data Recovery, Network System Configuration Management, Network System Monitoring, System Performance Analysis, Compromise Analysis and Response, Fault Analysis
Network Component Related Technology	-Network Standards Understanding and Application of Network Standards
Database System Architecture	-Database Operation Technology Backup/Restore, Database Reconfiguration/Statistical Information Acquisition, Performance Monitoring -Database Operation Design Patch Application, Version-up Methods

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Skill Items	Knowledge Items
System Management System Architecture	-Operation Related System Assessment Analysis Techniques of System Operations Management, Assessment Techniques of System Operations Management, Risk Analysis -System Management Plan Management Policy of System Operations, Cost Estimate for System and Service Provision, Policy Decision of User Service Level, Service Desks, SLA -System Operational Method Techniques System Operational Management Methods (Job Automatic Control, etc.), Monitoring Methods (Operation Monitoring, Failure Monitoring, Performance Monitoring, Threshold Monitoring), Backup/Recovery Methods -Maintenance Techniques Maintenance Techniques
System Management Component Related Technology	-Service Delivery Service Level Management (including Performance Management), Financial Management for IT Services, Capacity Management, Availability Management, IT Service Continuity Management -System Operation Monitoring, Operations/Job Management, Service Delivery (System Deployment, Relocation, Change, and Operating Procedure from Start to End), Backup/Recovery, Business Operations, System Operations, Log Collection and Utilization, User Management -System Maintenance Standards Maintenance Standards(Target, Scope, Cycle), Maintenance Procedure Standards (Application and Acceptance Procedure) -Contingency Planning Contingency Planning -System Investment Assessment Techniques Investment Evaluation Techniques of Information Systems -System Audit Techniques Audit Techniques of System Operations

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Skill Items	Knowledge Items
Security System Architecture	-Security Analysis Security Monitoring Techniques, Accident Detection Techniques, Accident Treatment Techniques, Accident Analysis Techniques, Restoration Techniques for Accidents, Recurrence Prevention Techniques, Security Assessment Techniques
Security Component Related Technology	-Security Technique Trends Single Sign-on, PKI, Security Administration, Intrusion Prevention, Encryption, Electronic Signature, Firewall, Fortification (Hardening), Zoning -Security and Personal Information Security Measures, Secret Preservation, Measures for Prevention of Falsification, Intrusion Prevention, Computer Virus, Integrity Measures, Availability Measures, Safety Measures, Social Engineering, Privacy Protection, Risk Management, Guidelines and Regulations -Computer Forensics (Tracking for Preservation of Evidence) Computer Forensics (Tracking for Preservation of Evidence)

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System Audit (1 course)

[ ] is a corresponding specialty field

●System Operations Audit [System Management]

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Course Name / Content	System Operations Audit
Training Course Level	☐Introductory Course ☐Basic Course ■Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	☐Common to IT Specialist ☐Platform ■System Management ☐Database ☐Common Application Infrastructure ☐Network ☐Security
Outline	Aim: Attendees learn how to audit operations of information systems in terms of reliability, efficiency, and safety. The attendees learn purposes and steps of operational audit of information systems, points on assessment in perspectives of reliability, efficiency, and safety, assessment techniques, how to preserve tracking evidence, and how to report audit records. ○What is system audit? ○Purpose of operational audit of information systems ○Steps of operational audit of information systems ○Reports of operational audit of information systems
Attendee	Those who aim to acquire the knowledge of IT Specialist (System Management) level 4
Precondition	Have completed Operations Management System Design course, Quality and Improvement of System Operations Management course, and Requirements Definition of System Operations Management course, or possess equivalent knowledge.
Training Method	Lecture, Workshop
Duration	Standard term: 2 days (classroom)
Learning Goal	Can work in an audited department and cooperate in activities of system operations audit based on understanding of purposes of operations management audit of an information system. Can work as a support for an auditor of system operations. Can contribute to system operations audit of an information system as a leader of a technical team.

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Skill Items	Knowledge Items
Platform System Architecture	-System Architecture Design Methods Reliability Enabling Technology, Performance Design Technology (Performance and Capacity Related Design Technology and Estimating Technology), System Architecture Design Technology -Platform Requirement Definition Techniques Availability Requirements, Performance Requirements, Expandability Requirements, Security Requirement (User Definition, Authority Definition), Capacity Requirements
Platform Product Utilization Technology	-Product Knowledge (Platform) Hardware (Server, Storage, etc.), Operating Systems (Mainframe, Small Business Computer, Unix, Windows, Linux, etc.), Middleware (Cluster Middleware, Database Management Systems (DBMS), WEB Server, AP Server, etc.), Backup Tools, Operating Management Tools, Test Tools -Platform Technology Servers (Architecture and Operating Principle), Storage (Architecture and Operating Principle), Operating Systems (Architecture and Operating Principle), File Systems (Architecture and Operating Principle), Systems Operations Management Technology (Operating Techniques, Management Techniques, Maintenance Technology, Backup/Recovery Techniques, Disaster Recovery Technology, etc.) -Middleware Technology Database Management Systems, Transaction-processing Techniques, System Linkage Technology (Messaging, File Exchange, etc.), Distributed Processing Technology, Parallel Processing Technology -System Diagnostic Techniques and Failure Measure Technology System Monitoring Technology, System Analysis and Diagnostic Technology, Failure Recovery Technology
Network System Architecture	-Operation, Maintenance, and Management of Network System Policies of Maintenance and Update, and Plan Creation, Implementation of Maintenance and Update, Backup and Data Recovery, Network System Configuration Management, Network System Monitoring, System Performance Analysis, Compromise Analysis and Response, Fault Analysis
Network Component Related Technology	-Network Standards Understanding and Application of Network Standards

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Skill Items	Knowledge Items
Database System Architecture	-Database Operation Technology Backup/Restore, Database Reconfiguration/Statistical Information Acquisition, Performance Monitoring -Database Operation Design Patch Application, Version-up Methods
Utilization Technology of Database Product	-Utilization Technology of Database Related Product Database Management Systems, Database Management Tools, Backup Tools, Database Monitoring Tools, Database Tuning Tools, Database Access API (JDBC, ODBC, DAO, etc.), Transaction Monitor, Database Security Tools, Modeling Tools, ETL Tools, BI Tools, Database Duplication Tools, Job Management Tools
System Management System Architecture	-Operation Related System Assessment Analysis Techniques of System Operations Management, Assessment Techniques of System Operations Management, Risk Analysis -System Management Plan Management Policy of System Operations, Cost Estimate for System and Service Provision, Policy Decision of User Service Level, Service Desks, SLA -System Operational Method Techniques System Operational Management Methods (Job Automatic Control, etc.), Monitoring Methods (Operation Monitoring, Failure Monitoring, Performance Monitoring, Threshold Monitoring), Backup/Recovery Methods -System Operational Management Design Monitoring Methods (Operation Monitoring, Failure Monitoring, Performance Monitoring, Threshold Monitoring), Normal and Abnormal Operations Methods and Operation Flow Design, Service Level Management Design, Incident Management and Issue Management and Change Control Process Design, Backup/Recovery Methods, Job Net Management Methods, Architecture of Log Rotation and Backup and Switching, Creation of Shell Scripts -Operating System Architecture Job Automatic Control Methods, Abnormal Response, Parameter Design of Operational Management Software (Threshold Setting, etc.), Filtering Techniques of Monitoring Message (Know-how), Log Rotation, Backup, and Switching Formulations, Operations Test Techniques, Creation of Shell Scripts -Maintenance Techniques Maintenance Techniques

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Skill Items	Knowledge Items
Utilization Technology of System Management Product	-Operation Management Software Products Monitoring Tools, Job Implementation Management Tools, Remote Manipulation Tools, Distribution Tools, Information Collection Tools (Log Collection), Backup/Recovery Tools, Incident Management Tools, Facility, Equipment, Maintenance Tools, Migration Support Tools -Service Delivery Service Level Management (including Performance Management), Financial Management for IT Services, Capacity Management, Availability Management, IT Service Continuity Management -System Operation Monitoring, Operations/Job Management, Service Delivery (System Deployment, Relocation, Change, and Operating Procedure from Start to End), Backup/Recovery, Business Operations, System Operations, Log Collection and Utilization, User Management -System Maintenance Standards Maintenance Standards(Target, Scope, Cycle), Maintenance Procedure Standards (Application and Acceptance Procedure) -Contingency Planning Contingency Planning -System Investment Assessment Techniques Investment Evaluation Techniques of Information Systems -System Audit Techniques Audit Techniques of System Operations
Security System Architecture	-Security Analysis Security Monitoring Techniques, Accident Detection Techniques, Accident Treatment Techniques, Accident Analysis Techniques, Restoration Techniques for Accidents, Recurrence Prevention Techniques, Security Assessment Techniques

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Skill Items	Knowledge Items
Security Component Related Technology	-Security Technique Trends Single Sign-on, PKI, Security Administration, Intrusion Prevention, Encryption, Electronic Signature, Firewall, Fortification (Hardening), Zoning -Security and Personal Information Security Measures, Secret Preservation, Measures for Prevention of Falsification, Intrusion Prevention, Computer Virus, Integrity Measures, Availability Measures, Safety Measures, Social Engineering, Privacy Protection, Risk Management, Guidelines and Regulations -Computer Forensics (Tracking for Preservation of Evidence) Computer Forensics (Tracking for Preservation of Evidence)

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Exercises in Security System Development (2 courses)

[ ] is a corresponding specialty field

- Exercises in Security System Installation [Security]
- Exercises in Security System Development [Security]

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Course Name / Content	Exercises in Security System Installation
Training Course Level	☐Introductory Course ■Basic Course ☐Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	☐Common to IT Specialist ☐Platform ☐System Management ☐Database ☐Common Application Infrastructure ☐Network ■Security
Outline	Aim: This is a fundamental course in security systems and is designed to develop IT professionals to be able to install security systems. This course is an entry-level for IT Specialists whose specialty field is Security. ○An overview and steps of product installation work ○Exercises in the installation work based on specifications -The attendees understand products with the following functions, and perform exercises in how to install the products (perform exercises by each product). Firewall, IDS and IPS, SSL accelerator, authentication systems (e.g., RADIUS), VPN, one-time password devices, biometrics authentication, quarantine LAN system, censorship system, security gate, virus detection, anti-spyware tools, Email audit, patch distribution, software installation monitoring, disk encryption, entry and exit control systems, monitoring camera
Attendee	Those who aim to acquire the knowledge of IT Specialist (Network) level 3
Precondition	Possess the following knowledge as technology relevant to security. Single sign-on, PKI, security administration, intrusion prevention, encryption, electric signature, firewalls, fortification
Training Method	Lecture, Workshop
Duration	Standard term: 3 days (classroom)
Learning Goal	Can install a security product based on its installation specification as a member of a technical team.

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Skill Items	Knowledge Items
Security System Architecture	-Implementation and Inspection of Security System Selection Techniques and Installation Techniques of Security Products, Security System Development Technology, Security Implementation and Inspection Technology -Implementation and Inspection of Security Systems Firewall, IDS/IPS, SSL Accelerator, Authentication Systems (RADIUS, etc.), VPN, One-time Password Devices, Biometrics Authentication, Quarantine LAN Systems, Censorship Systems, Security Gate, Virus Detection, Anti-spyware Tools, Email Audit, Patch Distribution, Software Installation Monitoring, Disk Encryption, Entry/Exit Control Systems, Monitoring Camera, Forensic Tools

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Course Name / Content	Exercises in Security System Development
Training Course Level	☐Introductory Course ■Basic Course ☐Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	☐Common to IT Specialist ☐Platform ☐System Management ☐Database ☐Common Application Infrastructure ☐Network ■Security
Outline	Aim: This is a fundamental course in security systems and is designed to train IT professionals to be able to develop security systems. ○Development steps and an overview of development work of security systems ○Exercises in security system development based on specifications -Selection of products -Creation of product installation specifications -Tests after installation
Attendee	Those who aim to acquire the knowledge of IT Specialist (Security) level 3
Precondition	Have completed Exercises in Security System Installation course, or possess equivalent knowledge.
Training Method	Lecture, Workshop
Duration	Standard term: 4 days (classroom)
Learning Goal	Can develop an information system that ensures security as a member of a technical team by selecting and combining security products in accordance with specifications of a security system and by setting up the security products correctly.

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Skill Items	Knowledge Items
Security System Architecture	-Implementation and Inspection of Security System Selection Techniques and Installation Techniques of Security Products, Security System Development Technology, Security Implementation and Inspection Technology -Security System Installation Assistance User Education and Training Techniques, User Support Techniques -Security System Operating Management Security Operating Techniques, System Maintenance Techniques -Implementation and Inspection of Security Systems Firewall, IDS/IPS, SSL Accelerator, Authentication Systems (RADIUS, etc.), VPN, One-time Password Devices, Biometrics Authentication, Quarantine LAN Systems, Censorship Systems, Security Gate, Virus Detection, Anti-spyware Tools, Email Audit, Patch Distribution, Software Installation Monitoring, Disk Encryption, Entry/Exit Control Systems, Monitoring Camera, Forensic Tools
Security Component Related Technology	-Security Technique Trends Single Sign-on, PKI, Security Administration, Intrusion Prevention, Encryption, Electronic Signature, Firewall, Fortification (Hardening), Zoning

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Security System Design (1 course)

[ ] is a corresponding specialty field

●Security System Design [Security]

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Course Name / Content	Security System Design
Training Course Level	☐Introductory Course ■Basic Course ☐Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	☐Common to IT Specialist ☐Platform ☐System Management ☐Database ☐Common Application Infrastructure ☐Network ■Security
Outline	Aim: This is a high-level course in security systems and is designed to develop IT professionals to be able to design security systems of information systems. ○An overview of operations and design steps of security systems ○Exercises in security system design based on security requirements definition -A concept of security and how to provide it -A concept of control and how to provide it -How to write security system specifications
Attendee	Those who aim to acquire the knowledge of IT Specialist (Security) level 3
Precondition	Have completed Exercises in Security System Development course, or possess equivalent knowledge.
Training Method	Lecture, Workshop
Duration	Standard term: 3 days (classroom)
Learning Goal	Can write security system specifications based on security requirements definition as a member of a technical team.

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Skill Items	Knowledge Items
Security System Architecture	-Security System Design Control Techniques for Authentication and Authorization, Physical Security Control Techniques, Logical Security Control Techniques, Data Reliability Assurance Technology on Network Infrastructure, Creation Techniques of Security Operating Procedure -Implementation and Inspection of Security Systems Firewall, IDS/IPS, SSL Accelerator, Authentication Systems (RADIUS, etc.), VPN, One-time Password Devices, Biometrics Authentication, Quarantine LAN Systems, Censorship Systems, Security Gate, Virus Detection, Anti-spyware Tools, Email Audit, Patch Distribution, Software Installation Monitoring, Disk Encryption, Entry/Exit Control Systems, Monitoring Camera, Forensic Tools
Security Component Related Technology	-Security Technique Trends Single Sign-on, PKI, Security Administration, Intrusion Prevention, Encryption, Electronic Signature, Firewall, Fortification (Hardening), Zoning

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Security System Requirements Definition (1 course)

[ ] is a corresponding specialty field

●Security System Requirements Definition [Security]

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Course Name / Content	Security System Requirements Definition
Training Course Level	☐Introductory Course ☐Basic Course ■Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	☐Common to IT Specialist ☐Platform ☐System Management ☐Database ☐Common Application Infrastructure ☐Network ■Security
Outline	Aim: This is a top-level course in security systems and helps attendees learn contents of system requirements definition of security systems and how to define system requirements. ○An overview of operations and requirements definition contents of security systems ○Formulation of security policies -Items to be decided in security policies -Risks to be expected and response ○Creation of requirements definition of security systems -A concept of security -Control methods -Clarification of request definition items -How to create request definition
Attendee	Those who aim to acquire the knowledge of IT Specialist (Security) level 4
Precondition	Have completed Exercises in Security System Development course, or possess equivalent knowledge.
Training Method	Lecture
Duration	Standard term: 2 days (classroom)
Learning Goal	Can create security requirements definition and formulate a security policy of an information system as a leader of a technical team.

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Skill Items	Knowledge Items
Security System Architecture	-Security Policy Formulation Assessment Techniques of Information Assets, Threat Awareness Techniques, Risk Identification Techniques, Measure arrangement and Investigation Techniques, Risk Assessment Techniques, Formulation Techniques of Security Policy -Formulation of Security Standards Security Standards Creation Techniques -Security System Planning Planning Techniques, Analysis Techniques -Security System Requirement Definition Requirement Definition Technique, Requirement Assessment Techniques, Creation Techniques of Requirements Definition Document -Security Analysis Security Monitoring Techniques, Accident Detection Techniques, Accident Treatment Techniques, Accident Analysis Techniques, Restoration Techniques for Accidents, Recurrence Prevention Techniques, Security Assessment Techniques -Security Review (Assessment and Improvement of Security System) Assessment Technique of Technical Information, Issues Clarification and Analysis Techniques, Risk Arrangement and Analysis Techniques -Implementation and Inspection of Security Systems Firewall, IDS/IPS, SSL Accelerator, Authentication Systems (RADIUS, etc.), VPN, One-time Password Devices, Biometrics Authentication, Quarantine LAN Systems, Censorship Systems, Security Gate, Virus Detection, Anti-spyware Tools, Email Audit, Patch Distribution, Software Installation Monitoring, Disk Encryption, Entry/Exit Control Systems, Monitoring Camera, Forensic Tools

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Skill Items	Knowledge Items
Security Component Related Technology	-Industry Specific Security Requirement and Cases Industry Standards, Industry Criteria, Messages -Consulting Implementation Utilization of Consulting Techniques, Establishment and Maintenance of Customer Relationship, Analysis and Design Techniques of Business Process -Security Technique Trends Single Sign-on, PKI, Security Administration, Intrusion Prevention, Encryption, Electronic Signature, Firewall, Fortification (Hardening), Zoning -Security and Personal Information Security Measures, Secret Preservation, Measures for Prevention of Falsification, Intrusion Prevention, Computer Virus, Integrity Measures, Availability Measures, Safety Measures, Social Engineering, Privacy Protection, Risk Management, Guidelines and Regulations

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Clarification of System Security Levels (Quality) and Risk Assessment (1 course)

[ ] is a corresponding specialty field

●Clarification of System Security Levels and Risk Assessment [Security]

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Course Name / Content	Clarification of System Security Levels and Risk Assessment
Training Course Level	☐Introductory Course ☐Basic Course ■Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	☐Common to IT Specialist ☐Platform ☐System Management ☐Database ☐Common Application Infrastructure ☐Network ■Security
Outline	Aim: This is a high-level course for IT Specialists and is designed to develop IT professionals to be able to clarify security levels and assess risks of information systems in operation. ○Concept of security system levels ○A concept of assessment of system security risks ○How to measure security levels and its steps ○How to assess security risks and its steps
Attendee	Those who aim to acquire the knowledge of IT Specialist (Security) level 4 Especially, those who are involved in security level assessment and risk assessment of information systems in operation
Precondition	Have completed Exercises in Security System Development course, or possess equivalent knowledge.
Training Method	Lecture
Duration	Standard term: 2 days (classroom)
Learning Goal	Can clarify a security level, assess security risks, and point out improvements of security of an information system in operation as a leader of a technical team.

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Skill Items	Knowledge Items
Security System Architecture	-Security Policy Formulation Assessment Techniques of Information Assets, Threat Awareness Techniques, Risk Identification Techniques, Measure arrangement and Investigation Techniques, Risk Assessment Techniques, Formulation Techniques of Security Policy -Security Analysis Security Monitoring Techniques, Accident Detection Techniques, Accident Treatment Techniques, Accident Analysis Techniques, Restoration Techniques for Accidents, Recurrence Prevention Techniques, Security Assessment Techniques -Security Review (Assessment and Improvement of Security System) Assessment Technique of Technical Information, Issues Clarification and Analysis Techniques, Risk Arrangement and Analysis Techniques -Implementation and Assistance of Information Security Audit Security Audit Techniques
Security Component Related Technology	-Security and Personal Information Security Measures, Secret Preservation, Measures for Prevention of Falsification, Intrusion Prevention, Computer Virus, Integrity Measures, Availability Measures, Safety Measures, Social Engineering, Privacy Protection, Risk Management, Guidelines and Regulations

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Incident Handling (1 course)

[ ] is a corresponding specialty field

●Incident Handling in System Security [Security]

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Course Name / Content	Incident Handling in System Security
Training Course Level	☐Introductory Course ☐Basic Course ■Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	イ☐Common to IT Specialist ☐Platform ☐System Management ☐Database ☐Common Application Infrastructure ☐Network ■Security
Outline	Aim: This is a high-level course for IT Specialists. Attendees acquire knowledge of how to response security failure of information systems in operation, how to perform initial response to incidents that are important in the response to the security failure. The attendees also acquire a sense of security technology in a perspective of management. ○What is security failure? ○Failure detection and analysis -Initial response to security failure (networking of contacts within an organization), processes of cause clarification, and minimization of extent of an impact ○Failure recovery -Provision of a basis for decision, formulation of measures against failures (preparation of alternatives), and a concept of fail-safe operations ○Legal action -Response to external matters, response to mass media, loss estimation, and evidence preservation
Attendee	Those who aim to acquire the knowledge of I T Specialist (Security) level 4 or 5 IT Specialists who are involved in system operations management or security management
Precondition	Have completed Exercises in Security System Development course, or possess equivalent knowledge.
Training Method	Lecture
Duration	Standard term: 2 days (classroom)
Learning Goal	Can take actions against security failure of an information system in operation in accordance with laws, regulations, and messages properly as a person responsible for or a leader of a technical team.

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Skill Items	Knowledge Items
Security System Architecture	-Security Failure (Incidents and Accidents) Urgent Response Techniques for Security Failure (Incidents and Accidents) -Security Analysis Security Monitoring Techniques, Accident Detection Techniques, Accident Treatment Techniques, Accident Analysis Techniques, Restoration Techniques for Accidents, Recurrence Prevention Techniques, Security Assessment Techniques -Security Review (Assessment and Improvement of Security System) Assessment Technique of Technical Information, Issues Clarification and Analysis Techniques, Risk Arrangement and Analysis Techniques
Security Component Related Technology	-Security and Personal Information Security Measures, Secret Preservation, Measures for Prevention of Falsification, Intrusion Prevention, Computer Virus, Integrity Measures, Availability Measures, Safety Measures, Social Engineering, Privacy Protection, Risk Management, Guidelines and Regulations -Computer Forensics (Tracking for Preservation of Evidence) Computer Forensics (Tracking for Preservation of Evidence)

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Security Related Laws and Regulations and Messages (1 course)

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●Security Related Laws [Security]

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Course Name / Content	Security Related Laws
Training Course Level	☐Introductory Course ☐Basic Course ■Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	☐Common to IT Specialist ☐Platform ☐System Management ☐Database ☐Common Application Infrastructure ☐Network ■Security
Outline	Aim: This is a high-level course for IT Specialists. Attendees learn security related laws, regulations, and messages. ○Security related laws, regulations, and massages ○Assessment and registration system ○Industry specific guidelines
Attendee	Those who aim to acquire the knowledge of I T Specialist (Security) level 4 or 5 IT Specialists who are involved in system development, operations management, or security management
Precondition	Have completed Exercises in Security System Development course, or possess equivalent knowledge.
Training Method	Lecture
Duration	Standard term: 2 days (classroom)
Learning Goal	Can explain system security management within a company as a person responsible for or a leader of a technical team based on understanding of security related laws, regulations, and messages.

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Skill Items	Knowledge Items
Security Component Related Technology	-Industry Specific Security Requirement and Cases Industry Standards, Industry Criteria, Messages -Security and Personal Information Security Measures, Secret Preservation, Measures for Prevention of Falsification, Intrusion Prevention, Computer Virus, Integrity Measures, Availability Measures, Safety Measures, Social Engineering, Privacy Protection, Risk Management, Guidelines and Regulations

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*Se*curity Management (1 course)

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●Security Management [Security]

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Course Name / Content	Security Management
Training Course Level	☐Introductory Course ☐Basic Course ■Advanced Course ☐Special Course
Training Area (Common or Specialty Field)	☐Common to IT Specialist ☐Platform ☐System Management ☐Database ☐Common Application Infrastructure ☐Network ■Security
Outline	Aim: This is a high-level course in security systems, and is designed to develop IT professionals to be able to design security systems. ○Security Management Overview ○Security Policy Formulation ○Security Standards Formulation ○Risk Arrangement and Analysis -User requirements arrangement and analysis ○Business Processes and Security Management ○Information Security and Business Management ○Risk Management
Attendee	Those who aim to acquire the knowledge of IT Specialist (Security) level 4 or 5 Those who are in charge of promotion of security management and registration system in their companies or organizations
Precondition	Have completed Exercises in Security System Development course and Security Related Laws course, or possess equivalent knowledge.
Training Method	Lecture
Duration	Standard term: 2 days (classroom)
Learning Goal	Can promote activities for security management and acquisition of ISO certification within a company as a person responsible for or a leader of a technical team.

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Skill Items	Knowledge Items
Security System Architecture	-Security Policy Formulation Assessment Techniques of Information Assets, Threat Awareness Techniques, Risk Identification Techniques, Measure arrangement and Investigation Techniques, Risk Assessment Techniques, Formulation Techniques of Security Policy -Security System Design Control Techniques for Authentication and Authorization, Physical Security Control Techniques, Logical Security Control Techniques, Data Reliability Assurance Technology on Network Infrastructure, Creation Techniques of Security Operating Procedure -Security System Installation Assistance User Education and Training Techniques, User Support Techniques -Security System Operating Management Security Operating Techniques, System Maintenance Techniques -Security Review (Assessment and Improvement of Security System) Assessment Technique of Technical Information, Issues Clarification and Analysis Techniques, Risk Arrangement and Analysis Techniques -Implementation and Assistance of Information Security Audit Security Audit Techniques
Security Component Related Technology	-Consulting Implementation Utilization of Consulting Techniques, Establishment and Maintenance of Customer Relationship, Analysis and Design Techniques of Business Process -Security Technique Trends Single Sign-on, PKI, Security Administration, Intrusion Prevention, Encryption, Electronic Signature, Firewall, Fortification (Hardening), Zoning

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