

**EVALUATING SAFETY-RELATED ACADEMIC
CURRICULA USING THE
CONTENT AND ROLE DELINEATION ANALYSES
CONDUCTED FOR PROFESSIONAL SAFETY
PRACTICE**

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TABLE OF CONTENTS

Introductory Material	1
Subject Areas	
Business Management Principles	3
Organizational and Behavioral Sciences.....	4
Education, Training, and Communication	5
General Sciences.....	6
Safety, Health, Environmental, and Security Management Systems and Auditing Systems.....	7
Hazard Recognition and Control	8
Risk Assessment and Risk Management	9
Emergency Management	10
Health Sciences	11
Ergonomics and Human Factors Sciences.....	12
Environmental Sciences.....	12
Security Sciences	13
Fire Sciences	14
Measurement and Monitoring.....	14
Industry-specific Safety Principles	15

Appendix A: Safety Fundamentals Examination Blueprint

Appendix B: Comprehensive Practice Examination Blueprint

Introductory Material

The purpose of this document is to present information for evaluating the level of correlation an academic curriculum's coursework has with the validated knowledge and skills associated with professional safety practice. The information in this document is obtained wholly from the published Board of Certified Safety Professionals (BCSP) examination blueprints for the Safety Fundamentals and Comprehensive Practice examinations used in the Certified Safety Professional® (CSP®) credentialing program.

BCSP assumes that all candidates for the Safety Fundamentals and Comprehensive Practice examinations have a college/university-level understanding of the following subject matter. (This subject matter is not identified specifically in the knowledge and skill statements required for professional safety practice, but knowledge of it is essential.)

- Algebra, geometry, and trigonometry
- Composition and technical writing
- Public speaking
- Psychology
- Specific laws, regulations, codes, and standards associated with safety, health, and environmental practice
- Ethical decision making

Due to the diverse and global nature of the CSP credentialing program, BCSP does not examine candidates on knowledge of specific laws, regulations, codes, and standards associated with safety, health, and environmental practice. However, BCSP expects graduates of college- and university-level safety-related degree programs to have a thorough understanding of the specific laws, regulations, codes, and standards associated with their practice in the particular geographic, political, and legal jurisdictions where they expect to practice.

In addition, BCSP requires candidates for the CSP credential, active CSPs, and others holding status with BCSP to demonstrate their understanding of, and conduct their practice in accordance with the BCSP *Code of Ethics and Professional Conduct*. Colleges and universities should prepare their graduates to conduct their practice to be consistent with the BCSP *Code of Ethics and Professional Conduct*.

The information in the subject matter tables on the following pages is organized so the reader can understand the level at which it applies. Knowledge at the **Foundation** level is considered fundamental to professional safety practice at any level and will be used also at the Advanced Level (see next paragraph). Foundation Level knowledge typically is presented to college and university students in their first two years of study. There are no skills at the Foundation Level.

Knowledge and skills at the **Advanced** level build upon Foundation Level knowledge. Advanced Level knowledge and skills typically are presented to university students in their final undergraduate years and in graduate studies. In these subject matter tables, all skill statements are at the Advanced Level.

Immediately following each knowledge and skill statement, one or more cross reference codes are shown in parentheses that link the respective knowledge or skill statement directly to its associated domains and topics or domains and tasks in the respective examination blueprint.

All Foundation Level knowledge statements are linked to domains and topics in the Safety Fundamentals examination blueprint (Appendix A). An example cross reference code for a Foundation Level knowledge statement is “D2-T3”, where D2 means Domain 2 (*Measuring, Evaluating, and Controlling Safety, Health, and Environmental Hazards*) and T3 means Topic 3 (*Administrative Controls*) in Domain 2 in the Safety Fundamentals examination blueprint.

All Advanced Level knowledge and skill statements are linked to domains and tasks in the Comprehensive Practice examination blueprint (Appendix B). An example cross reference code for a Advanced Level knowledge or skill statement is “D3-T1”, where D3 means Domain 3 (*Managing Safety, Health, Environmental, and Security Risk*) and T1 means Task 1 (*Design effective risk management methods using the results of risk assessments to eliminate or reduce safety, health, environmental, and security risks.*) in Domain 3 in the Comprehensive Practice examination blueprint.

BCSP **strongly** advises users of this document to review carefully the actual published examination blueprints in Appendix A and Appendix B to obtain context on how the knowledge and skill statements presented in the subject matter tables on the following pages are applied in professional safety practice at any level. Also, users may contact BCSP to receive a copy of the published analysis reports from which the examination blueprints were derived.

Business Management Principles

Subject Areas

Business Planning
Economics
Finance
Management Sciences
Project Management

Knowledge (Foundation Level)

- Cost benefit analysis (D4-T1)
- Definition and use of life cycle cost (D4-T1)
- Definition and use of net present value (D4-T1)
- Definition and use of return on investment (D4-T1)
- Economic effects of losses (D4-T3)
- Evaluation of cost, schedule, performance, and risk (D3-T5)
- Lagging indicators (D4-T3)
- Leading indicators (D4-T3)
- Project management terminology (D3-T5)
- Relationship between cost of losses and the effect on profitability (D4-T3)
- Review of specifications and designs against requirements (D3-T5)

Knowledge (Advanced Level)

- Budgeting, finance, and economic analysis techniques (D1-T3, D2-T2, D2-T3, D3-T1, D3-T2,
- Business software (D2-T2, D2-T3, D3-T1, D3-T2, D3-T3)
- Business planning and business continuity and contingency planning (D1-T3, D2-T1, D2-T2, D2-T3, D3-T1, D3-T2)
- Change management (D2-T2, D2-T3, D3-T1, D3-T3)
- Cultural norms and population stereotypes (D3-T1, D3-T4)
- Data management software (D1-T2)
- Employee assistance programs (D3-T1)
- Financial management principles (D3-T3)
- Information security and confidentiality requirements (D1-T1, D1-T2, D2-T1, D2-T2)
- Management principles of authority, responsibility, and accountability (D1-T3, D2-T2, D2-T3, D3-T1, D3-T2, D3-T3)
- Management sciences (D1-T3, D2-T2, D2-T3, D3-T1, D3-T2, D3-T3, D3-T4)
- Methods of facilitating teamwork (D3-T3)
- Organizational protocols (D3-T2, D3-T3, D3-T4)
- Organized labor/management relations (D3-T4)
- Project management concepts (D3-T2, D3-T3)
- Project management software (D3-T3)
- Schedule management principles (D3-T3)

Skills (Advanced Level)

- Applying management principles of authority, responsibility, and accountability (D3-T3, D3-T4)
- Calculating statistics from data sources (D1-T2, D1-T3, D1-T4, D2-T3)
- Comparing management systems with benchmarks (D2-T2)
- Comparing statistics to benchmarks (D1-T2, D1-T3, D1-T4, D2-T2, D2-T3)
- Creating motivational literature (D3-T4)
- Describing the costs and benefits of risk management options (D3-T2)
- Determining statistical significance (D1-T3, D1-T4, D2-T2, D2-T3)
- Developing systems to track project implementation (D3-T3)
- Evaluating the costs and benefits of risk management options (D3-T1)
- Implementing project management plans (D3-T3)
- Influencing stakeholder behavior (D3-T4)
- Interviewing people (D1-T3, D2-T1, D2-T2, D2-T3, D3-T1, D3-T3)
- Leading people (D3-T3, D3-T4)
- Leading teams (D3-T3, D3-T4)
- Motivating project stakeholders (D3-T3)
- Motivating stakeholders (D3-T4)
- Performing financial analyses of risk management options (D3-T1)
- Supervising people (D3-T3)
- Using project management software (D3-T3)
- Using statistics to define benchmarks and performance standards (D1-T4, D2-T3)
- Working with organized labor unions and management (D3-T4)

Organizational and Behavioral Sciences

Subject Areas

Behavioral Sciences Organizational Behavior

NOTE: A college-level understanding of basic human psychology is assumed.

Knowledge (Foundation Level)

- Conflict resolution (D3-T4)
- Methods of facilitating teams (D3-T4)
- Multidisciplinary teamwork (D3-T4)
- Negotiation procedures (D3-T4)

Knowledge (Advanced Level)

- Behavior modification techniques (D3-T4)
- Employee/stakeholder incentive programs (D3-T1)
- Group dynamics (D1-T3, D2-T2, D3-T3, D3-T4)
- Methods of achieving project stakeholder acceptance of project goals (D3-T3, D3-T4)
- Principles of supervising people (D3-T3)
- Stakeholder participation committees (D3-T4)

Skills (Advanced Level)

- Applying management principles of authority, responsibility, and accountability (D3-T3, D3-T4)
- Calculating statistics from data sources (D1-T2, D1-T3, D1-T4, D2-T3)
- Developing surveys to capture data related to organizational culture (D1-T3)
- Encouraging participation in risk management processes (D3-T4)
- Estimating organizational risk (D2-T1)
- Influencing stakeholder behavior (D3-T4)
- Interpreting organizational culture surveys and perception surveys (D2-T3)
- Interviewing people (D1-T3, D2-T1, D2-T2, D2-T3, D3-T1, D3-T3)
- Leading people (D3-T3, D3-T4)
- Leading teams (D3-T3, D3-T4)
- Motivating stakeholders (D3-T4)
- Obtaining meaningful feedback (D2-T3)
- Resolving conflicts (D3-T3, D3-T4)
- Soliciting stakeholder feedback (D3-T4)
- Supervising people (D3-T3)
- Using statistics to define benchmarks and performance standards (D1-T4, D2-T3)
- Using statistics to show trends in performance indicators (D2-T3)
- Working with organized labor unions and management (D3-T4)

Education, Training, and Communications

Subject Areas

Training Principles
Communications
Information Sources

NOTE: A college-level understanding of technical writing, composition, and public speaking is assumed.

Knowledge (Foundation Level)

- Adult learning techniques (D3-T1)
- ANSI/ASSE Z490.1 (D3-T1)
- Methods of training delivery (D3-T1)
- Methods of training evaluation (D3-T1)
- Presentation tools (D3-T1)

Knowledge (Advanced Level)

- Adult learning (D3-T1, D3-T4)
- Competencies of other professionals with whom the safety professional interacts (D1-T1, D1-T3, D1-T4, D2-T2, D2-T3, D3-T1, D3-T3, D3-T4)
- Internet resources (D1-T1, D1-T3, D1-T4, D2-T2)
- Education and training methods (D3-T1, D3-T2, D3-T4)
- Interpersonal communications (D3-T2, D3-T3, D3-T4)
- Presentation media and technologies (D3-T2, D3-T3, D3-T4)
- Presentation strategies (D3-T2, D3-T3, D3-T4)
- Product certification and listing agencies (D1-T4)
- Protocols for public announcements (D3-T4)
- Public communication techniques (D3-T4)
- Report presentation strategies (D2-T2)
- Risk communication techniques (D3-T4)
- Sources of information on hazards, threats, and vulnerabilities (D1-T1, D1-T3, D1-T4)
- Sources of information on risk (D2-T1, D3-T1)
- Sources of information on risk management options (D3-T1)
- Sources of information related to local laws, regulations, and consensus codes and standards (D1-T4)
- Target audience background (D3-T2, D3-T4)
- Training assessment instruments (D2-T3, D3-T1, D3-T4)

Skills (Advanced Level)

- Administering training assessment instruments (D3-T4)
- Communicating with subject matter experts (D1-T1, D1-T3, D1-T4, D2-T1, D2-T2, D2-T3, D3-T1, D3-T3, D3-T4)
- Comparing statistics to benchmarks (D1-T2, D1-T3, D1-T4, D2-T2, D2-T3)
- Conducting training (D3-T4)
- Consulting with equipment manufacturers and commodity suppliers (D1-T1, D1-T4, D2-T1, D2-T2, D3-T1, D3-T3)
- Creating motivational literature (D3-T4)
- Delivering motivational presentations (D3-T4)
- Describing the effects of implementing safety, health, and environmental plans, programs, and policies (D3-T2)
- Describing trends to support risk management options (D3-T2)
- Designing effective labels, signs, and warnings (D3-T1)
- Developing and using lesson plans (D3-T4)
- Developing surveys to capture data related to organizational culture (D1-T3)
- Developing training assessment instruments (D3-T1)
- Developing training programs (D3-T1)
- Encouraging participation in risk management processes (D3-T4)
- Exchanging information over the Internet (D3-T4)
- Explaining risk concepts to stakeholders and the public (D3-T4)
- Explaining risk management options to decision makers (D3-T2)
- Explaining risk management options to stakeholders and the public (D3-T4)
- Facilitating stakeholder participation committees (D3-T4)
- Finding sources of information on hazards, threats, and vulnerabilities (D1-T1)
- Giving public announcements (D3-T4)
- Influencing stakeholder behavior (D3-T4)
- Interacting with journalists and the media (D3-T4)
- Interviewing people (D1-T3, D2-T1, D2-T2, D2-T3, D3-T1, D3-T3)
- Making presentations to decision makers (D3-T2)
- Making presentations to stakeholders and the public (D3-T4)
- Measuring training program effectiveness (D2-T3)
- Motivating stakeholders (D3-T4)
- Negotiating with political entities (D3-T4)
- Obtaining meaningful feedback (D2-T3)
- Performing training needs assessments (D3-T1)
- Presenting financial analyses of risk management options (D3-T2)
- Providing an effective learning environment (D3-T4)
- Providing input in standards development activities (D3-T4)
- Soliciting stakeholder feedback (D3-T4)
- Using business software to present reports (D2-T2, D2-T3)
- Using the Internet to find information (D1-T1, D1-T3, D1-T4, D2-T2)

General Sciences

Subject Areas

Biology
Chemistry
Electricity
Fluid Flow
Mechanics
Probability and Statistics

NOTE: A college-level understanding of algebra, geometry, and trigonometry is assumed.

Knowledge (Foundation Level)

- Concepts of probability (D4-T2)
- Normal (Gaussian) distribution: description, calculations, and interpretations (D4-T2)
- Poisson distribution: description, calculations, and interpretations (D4-T2)
- Descriptive statistics: description, calculations, and interpretations (D4-T2)
- Inferential statistics: description, calculations, and interpretations (D4-T2)

Knowledge (Advanced Level)

- Applied sciences: fluid flow, mechanics, electricity (D2-T1, D2-T2, D3-T1)
- Basic sciences: anatomy, biology, chemistry, physics, physiology (D2-T1, D2-T2, D3-T1)
- Mathematics and statistics (D1-T2, D1-T3, D1-T4, D2-T1, D2-T2, D2-T3, D3-T1, D3-T2)

Skills (Advanced Level)

- Calculating statistics from data sources (D1-T2, D1-T3, D1-T4, D2-T3)
- Describing trends to support risk management options (D3-T2)
- Determining statistical significance (D1-T3, D1-T4, D2-T2, D2-T3)
- Interpreting plans, specifications, technical drawings, and process flow diagrams (D2-T1, D2-T2, D3-T1)
- Using data management software (D1-T2)
- Using statistics to define benchmarks and performance standards (D1-T4, D2-T3)
- Using statistics to estimate risk (D2-T1)
- Using statistics to explain the effects of risk management options (D3-T2)
- Using statistics to show trends in performance indicators (D2-T3)
- Using statistics to understand risk (D3-T1)

Safety, Health, Environmental, and Security Management Systems and Auditing Systems

Subject Areas

Management Systems
Auditing Systems and Protocols
Inspections

Knowledge (Foundation Level)

- Purpose and objective of ANSI/AIHA Z10 (D3-T7)
- Purpose and objective of the ISO 14000 series of environmental management system standards (D3-T7)
- Purpose and objective of ISO 19011 (D3-T3)
- Purpose and objective of the OHSAS 18000 series of occupational health and safety management system standards (D3-T7)
- Purpose and objective of the U.S. Occupational Safety and Health Administration Voluntary Protection Programs (D3-T7)
- Elements of an inspection and auditing program (D3-T3)
- Reasons to perform inspections and audits (D3-T3)

Knowledge (Advanced Level)

- Benchmarks and performance standards (D1-T4, D2-T2, D2-T3)
- Management system auditing techniques (D2-T2, D2-T3)
- Safety, health, and environmental management and audit systems (D2-T2, D2-T3)
- Standards development processes (D3-T4)
- Types of leading and lagging safety and health performance indicators (D2-T3)

Skills (Advanced Level)

- Applying management principles of authority, responsibility, and accountability (D3-T3, D3-T4)
- Communicating with subject matter experts (D1-T1, D1-T3, D1-T4, D2-T1, D2-T2, D2-T3, D3-T1, D3-T3, D3-T4)
- Comparing documented procedures and tasks with actual operations (D2-T2)
- Comparing management systems with benchmarks (D2-T2)
- Comparing statistics to benchmarks (D1-T2, D1-T3, D1-T4, D2-T2, D2-T3)
- Conducting root cause analyses (D2-T1)
- Consulting with equipment manufacturers and commodity suppliers (D1-T1, D1-T4, D2-T1, D2-T2, D3-T1, D3-T3)
- Creating data collection forms (D1-T2)
- Describing the effects of implementing safety, health, and environmental plans, programs, and policies (D3-T2)
- Describing trends to support risk management options (D3-T2)
- Estimating organizational risk (D2-T1)
- Evaluating management system audits (D2-T3)
- Evaluating the results of root cause analyses (D2-T2, D2-T3)
- Leading management system audits (D2-T2)
- Organizing chemical process safety information (D3-T1)
- Performing facility and equipment inspections (D2-T2)
- Recognizing changes needed in management systems (D3-T2)
- Recognizing external and internal threats to facilities, systems, processes, equipment, and employees (D1-T1, D2-T2)
- Recognizing management system changes (D2-T2, D2-T3)
- Using statistics to define benchmarks and performance standards (D1-T4, D2-T3)
- Using statistics to show trends in performance indicators (D2-T3)

Hazard Recognition and Control

Subject Areas

Hazard Recognition

Hazard Control

Knowledge (Foundation Level)

- Biological hazards (D1-T1)
- Chemical hazards (D1-T2)
- Electrical hazards (D1-T3)
- Natural hazards (D1-T4)
- Radiation hazards (D1-T5)
- Structural and mechanical hazards (D1-T6)
- Hazards related to fires and explosions (D1-T7)
- Hazards related to human factors and ergonomics (D1-T8)

Engineering Controls

- Dust control (D1-T2)
- Equipment and material handling (D1-T2)
- Excavation shoring (D1-T2)
- Fall protection (D1-T2)
- Hazardous energy control (D1-T2)
- Mechanical and machine guarding (D1-T2)
- Segregation and separation (D1-T2)
- Substitution and selection of alternative design strategies (D1-T2)
- Ventilation (D1-T2)

Administrative Controls

- Accountability (D1-T3)
- Behavior modification (D1-T3)
- Decontamination processes (D1-T3)
- Exposure limitation (D1-T3)
- Fitness for duty (D1-T3)
- Housekeeping (D1-T3)
- Labels (D1-T3)
- Material safety data sheets (D1-T3)
- Safe work permits (D1-T3)
- Training and education (D1-T3)
- Warnings and signs (D1-T3)
- Work zone establishment (D1-T3)
- Written plans, procedures, and work practices (D1-T3)

Personal Protective Equipment

- Assessment of need for personal protective equipment (D1-T4)
- Selection and testing of personal protective equipment (D1-T4)
- Usage of personal protective equipment (D1-T4)
- Maintenance of personal protective equipment (D1-T4)

Knowledge (Advanced Level)

- Administrative controls (D3-T1)
- Engineering controls (D3-T1)
- Labels, signs, and warnings-including international symbols (D3-T1, D3-T4)
- Personal protective equipment (D3-T1)
- Physical and chemical characteristics of hazardous materials (D2-T1, D3-T1)
- Pressure relief systems (D2-T1, D3-T1)
- Ventilation systems (D2-T1, D3-T1)

Skills (Advanced Level)

- Applying management principles of authority, responsibility, and accountability (D3-T3, D3-T4)
- Applying risk-based decision-making tools for prioritizing risk management options (D3-T1, D3-T2)
- Calculating maximum occupancy and egress capacity (D2-T1)
- Calculating required containment volumes and hazardous materials storage requirements (D2-T1)
- Conducting job safety analyses and task analyses (D1-T1)
- Consulting with equipment manufacturers and commodity suppliers (D1-T1, D1-T4, D2-T1, D2-T2, D3-T1, D3-T3)
- Creating plans for implementing risk management options (D3-T2)
- Describing the costs and benefits of risk management options (D3-T2)
- Describing the effects of implementing safety, health, and environmental plans, programs, and policies (D3-T2)
- Describing trends to support risk management options (D3-T2)
- Designing effective labels, signs, and warnings (D3-T1)
- Determining hazardous materials storage requirements (D3-T1)
- Developing effective administrative controls (D3-T1)
- Evaluating safety, health, environmental, and security plans, programs, and policies (D2-T2, D2-T3)
- Identifying hazards associated with equipment, manufacturing systems, and production processes (D1-T1)
- Interpreting plans, specifications, technical drawings, and process flow diagrams (D2-T1, D2-T2, D3-T1)
- Obtaining information on product certification and listing requirements (D1-T4)
- Recognizing changes needed in management systems (D3-T2)
- Recognizing external and internal threats to facilities, systems, processes, equipment, and employees (D1-T1, D2-T2)
- Recognizing management system changes (D2-T2, D2-T3)
- Recommending effective engineering controls (D3-T1)
- Recommending facility life safety features (D3-T1)
- Recommending methods to reduce the risk of occupational exposures (D3-T1)
- Reducing the risk of error-likely situations (D3-T1)
- Selecting appropriate personal protective equipment (D3-T1)
- Using the results of risk assessments to support risk management options (D3-T1, D3-T2)
- Using the results of root cause analyses to support risk management options (D3-T1, D3-T2)

Risk Assessment and Risk Management

Subject Areas

Emergency/Crisis/Disaster Management
Incident Investigation and Root Cause Analysis
Risk Analysis/Assessment
Risk Management
Insurance

Knowledge (Foundation Level)

- The risk management process (D3-T6)
- Risk analysis methods (D3-T6)

Knowledge (Advanced Level)

- Chain of custody procedures (D1-T2)
- Facility siting and layout (D2-T1, D3-T1)
- Hazard analysis methods (D1-T1)
- Incident investigation techniques (D1-T1, D1-T3)
- Insurance/risk transfer principles (D2-T1, D3-T1)
- Job safety analysis and task analysis methods (D1-T1, D2-T2)
- Methods and techniques for evaluating facilities, products, systems, processes, and equipment (D1-T1, D2-T2)
- Multi-employer worksite issues (D2-T1, D2-T2, D3-T1, D3-T4)
- Principles of managing risk throughout the design process (D3-T1)
- Qualitative, quantitative, deductive, and inductive risk assessment methods (D1-T1, D1-T2, D1-T3, D1-T4, D2-T1, D2-T2, D3-T1)
- Risk-based decision-making tools (D3-T1, D3-T2, D3-T3)
- Root cause analysis methods (D2-T1, D2-T2, D3-T1)
- Sources of information on risk (D2-T1, D3-T1)
- Sources of information on risk management options (D3-T1)
- Types, sources, and characteristics of hazards, threats, and vulnerabilities (D1-T1)
- Workplace violence (D2-T1, D3-T1)

Skills (Advanced Level)

- Applying risk-based decision-making tools for prioritizing risk management options (D3-T1, D3-T2)
- Calculating required containment volumes and hazardous materials storage requirements (D2-T1)
- Communicating with subject matter experts (D1-T1, D1-T3, D1-T4, D2-T1, D2-T2, D2-T3, D3-T1, D3-T3, D3-T4)
- Conducting job safety analyses and task analyses (D1-T1)
- Conducting root cause analyses (D2-T1)
- Creating data collection forms (D1-T2)
- Creating plans for implementing risk management options (D3-T2)
- Describing the costs and benefits of risk management options (D3-T2)
- Describing the effects of implementing safety, health, and environmental plans, programs, and policies (D3-T2)
- Describing trends to support risk management options (D3-T2)
- Developing procedures that incorporate risk management controls (D3-T1)
- Developing safety, health, environmental, and security plans, programs, and policies (D3-T1)
- Estimating public risk (D2-T1)
- Estimating the risk of human error (D2-T1)
- Evaluating business continuity and contingency plans (D2-T2)
- Evaluating emergency/crisis/disaster management and response plans (D2-T1)
- Evaluating risk assessments (D2-T2, D2-T3)
- Evaluating safety, health, environmental, and security plans, programs, and policies (D2-T2, D2-T3)
- Evaluating the costs and benefits of risk management options (D3-T1)
- Evaluating the results of root cause analyses (D2-T2, D2-T3)
- Explaining risk concepts to stakeholders and the public (D3-T4)
- Explaining risk management options to decision makers (D3-T2)
- Explaining risk management options to stakeholders and the public (D3-T4)
- Facilitating chemical process hazard analyses (D2-T1)
- Finding sources of information on hazards, threats, and vulnerabilities (D1-T1)
- Interviewing people (D1-T3, D2-T1, D2-T2, D2-T3, D3-T1, D3-T3)
- Interviewing witnesses to incidents (D1-T1, D1-T3)
- Leading comprehensive risk assessments (D2-T1)
- Leading incident investigations (D1-T1, D1-T3)
- Leading threat and vulnerability assessments (D2-T1)
- Performing financial analyses of risk management options (D3-T1)
- Performing gap analyses (D3-T1)
- Performing hazard analyses (D1-T1)
- Recognizing external and internal threats to facilities, systems, processes, equipment, and employees (D1-T1, D2-T2)
- Recommending methods to reduce the risk of occupational exposures (D3-T1)
- Reducing the risk of error-likely situations (D3-T1)
- Using statistics to estimate risk (D2-T1)
- Using statistics to explain the effects of risk management options (D3-T2)
- Using statistics to understand risk (D3-T1)
- Using the results of risk assessments to support risk management options (D3-T1, D3-T2)
- Using the results of root cause analyses to support risk management options (D3-T1, D3-T2)

Emergency Management

Subject Areas

Emergency Planning and Management

Emergency Response Planning

Knowledge (Foundation Level)

- Emergency/crisis/disaster planning and response (D3-T2)

Knowledge (Advanced Level)

- Community emergency planning (D2-T1, D3-T1)
- Competencies of other professionals with whom the safety professional interacts (D1-T1, D1-T3, D1-T4, D2-T2, D2-T3, D3-T1, D3-T3, D3-T4)
- Dispersion modeling (D2-T1)
- Emergency/crisis/disaster management (D2-T1, D2-T2, D3-T1)
- Emergency/crisis/disaster response planning (D2-T1, D2-T2, D3-T1)
- Incident command methods (D3-T1)
- Mutual aid agreements (D2-T1, D3-T1)

Skills (Advanced Level)

- Applying management principles of authority, responsibility, and accountability (D3-T3, D3-T4)
- Applying risk-based decision-making tools for prioritizing risk management options (D3-T1, D3-T2)
- Communicating with subject matter experts (D1-T1, D1-T3, D1-T4, D2-T1, D2-T2, D2-T3, D3-T1, D3-T3, D3-T4)
- Consulting with equipment manufacturers and commodity suppliers (D1-T1, D1-T4, D2-T1, D2-T2, D3-T1, D3-T3)
- Creating emergency/crisis/disaster management and response plans (D3-T1)
- Determining how released hazardous materials migrate through the air, surface water, soil, and water table (D2-T1)
- Developing procedures that incorporate risk management controls (D3-T1)
- Developing safety, health, environmental, and security plans, programs, and policies (D3-T1)
- Evaluating business continuity and contingency plans (D2-T2)
- Evaluating emergency/crisis/disaster management and response plans (D2-T1)
- Evaluating facility fire risk (D2-T1)
- Evaluating life safety features in facilities (D2-T1)
- Giving public announcements (D3-T4)
- Interacting with journalists and the media (D3-T4)
- Interviewing people (D1-T3, D2-T1, D2-T2, D2-T3, D3-T1, D3-T3)
- Making presentations to stakeholders and the public (D3-T4)
- Negotiating with political entities (D3-T4)
- Organizing chemical process safety information (D3-T1)
- Using chemical process safety information (D2-T1)
- Using dispersion modeling software (D2-T1)

Health Sciences

Subject Areas

Anatomy
Industrial Hygiene
Epidemiology
Physiology
Toxicology

Knowledge (Foundation Level)

- Biological hazards (D1-T1)
- Chemical hazards (D1-T2)
- Radiation hazards (D1-T5)
- Measurement and monitoring (D2-T1)
- Engineering controls (D2-T2)
- Administrative controls (D2-T3)
- Personal protective equipment (D2-T4)

Knowledge (Advanced Level)

- Agriculture safety-including food supply safety (D2-T1, D3-T1)
- Basic sciences: anatomy, biology, chemistry, physics, physiology (D2-T1, D2-T2, D3-T1)
- Biological safety (D2-T1, D3-T1)
- Competencies of other professionals with whom the safety professional interacts (D1-T1, D1-T3, D1-T4, D2-T2, D2-T3, D3-T1, D3-T3, D3-T4)
- Epidemiology (D2-T1, D3-T1)
- Industrial hygiene (D2-T1, D3-T1)
- Infectious diseases (D2-T1, D3-T1)
- Qualitative, quantitative, deductive, and inductive risk assessment methods (D1-T1, D1-T2, D1-T3, D1-T4, D2-T1, D2-T2, D3-T1)
- Radiation safety (D2-T1, D3-T1)
- Toxicology (D2-T1, D3-T1)
- Types, sources, and characteristics of hazards, threats, and vulnerabilities (D1-T1)

Skills (Advanced Level)

- Communicating with subject matter experts (D1-T1, D1-T3, D1-T4, D2-T1, D2-T2, D2-T3, D3-T1, D3-T3, D3-T4)
- Conducting job safety analyses and task analyses (D1-T1)
- Conducting root cause analyses (D2-T1)
- Consulting with equipment manufacturers and commodity suppliers (D1-T1, D1-T4, D2-T1, D2-T2, D3-T1, D3-T3)
- Determining occupational exposures (D2-T1)
- Determining statistical significance (D1-T3, D1-T4, D2-T2, D2-T3)
- Developing effective administrative controls (D3-T1)
- Developing procedures that incorporate risk management controls (D3-T1)
- Developing safety, health, environmental, and security plans, programs, and policies (D3-T1)
- Evaluating the results of root cause analyses (D2-T2, D2-T3)
- Interviewing people (D1-T3, D2-T1, D2-T2, D2-T3, D3-T1, D3-T3)
- Recommending effective engineering controls (D3-T1)
- Recommending methods to reduce the risk of occupational exposures (D3-T1)
- Selecting appropriate personal protective equipment (D3-T1)
- Using chemical process safety information (D2-T1)
- Using monitoring and sampling equipment (D1-T1, D2-T2)
- Using sampling and measurement devices (D3-T1)

Ergonomics and Human Factors Sciences

Subject Areas

Ergonomics
Human Factors

Knowledge (Foundation Level)

- Hazards related to human factors and ergonomics (D1-T8)
- Human factors and ergonomic design (D2-T2)
- Measurement and monitoring (D2-T1)
- Engineering controls (D2-T2)
- Administrative controls (D2-T3)
- Personal protective equipment (D2-T4)

Knowledge (Advanced Level)

- Basic sciences: anatomy, biology, chemistry, physics, physiology (D2-T1, D2-T2, D3-T1)
- Competencies of other professionals with whom the safety professional interacts (D1-T1, D1-T3, D1-T4, D2-T2, D2-T3, D3-T1, D3-T3, D3-T4)
- Cultural norms and population stereotypes (D3-T1, D3-T4)
- Ergonomics and human factors (D2-T1, D3-T1)
- Job safety analysis and task analysis methods (D1-T1, D2-T2)

Skills (Advanced Level)

- Communicating with subject matter experts (D1-T1, D1-T3, D1-T4, D2-T1, D2-T2, D2-T3, D3-T1, D3-T3, D3-T4)
- Conducting job safety analyses and task analyses (D1-T1)
- Developing effective administrative controls (D3-T1)
- Developing procedures that incorporate risk management controls (D3-T1)
- Developing safety, health, environmental, and security plans, programs, and policies (D3-T1)
- Estimating the risk of human error (D2-T1)
- Recommending effective engineering controls (D3-T1)
- Recommending methods to reduce the risk of occupational exposures (D3-T1)
- Reducing the risk of error-likely situations (D3-T1)
- Selecting appropriate personal protective equipment (D3-T1)

Environmental Sciences

Subject Areas

Environmental Management
Environmental Sciences

Knowledge (Foundation Level)

- Biological hazards (D1-T1)
- Chemical hazards (D1-T2)
- Radiation hazards (D1-T5)
- Hazards related to fires and explosions (D1-T7)
- Measurement and monitoring (D2-T1)
- Engineering controls (D2-T2)
- Administrative controls (D2-T3)
- Personal protective equipment (D2-T4)

Knowledge (Advanced Level)

- Competencies of other professionals with whom the safety professional interacts (D1-T1, D1-T3, D1-T4, D2-T2, D2-T3, D3-T1, D3-T3, D3-T4)
- Dispersion modeling (D2-T1)
- Environmental protection and pollution prevention (D2-T1, D3-T1)
- Hazardous materials management (D2-T1, D2-T2, D3-T1)
- Hazardous waste management (D2-T1, D2-T2, D3-T1)
- Methods and techniques for evaluating facilities, products, systems, processes, and equipment (D1-T1, D2-T2)
- Physical and chemical characteristics of hazardous materials (D2-T1, D3-T1)
- Principles of managing risk throughout the design process (D3-T1)
- Qualitative, quantitative, deductive, and inductive risk assessment methods (D1-T1, D1-T2, D1-T3, D1-T4, D2-T1, D2-T2, D3-T1)
- Types, sources, and characteristics of hazards, threats, and vulnerabilities (D1-T1)

Skills (Advanced Level)

- Calculating required containment volumes and hazardous materials storage requirements (D2-T1)
- Communicating with subject matter experts (D1-T1, D1-T3, D1-T4, D2-T1, D2-T2, D2-T3, D3-T1, D3-T3, D3-T4)
- Conducting root cause analyses (D2-T1)
- Consulting with equipment manufacturers and commodity suppliers (D1-T1, D1-T4, D2-T1, D2-T2, D3-T1, D3-T3)
- Determining hazardous materials storage requirements (D3-T1)
- Determining how released hazardous materials migrate through the air, surface water, soil, and water table (D2-T1)
- Developing effective administrative controls (D3-T1)
- Developing procedures that incorporate risk management controls (D3-T1)
- Developing safety, health, environmental, and security plans, programs, and policies (D3-T1)
- Evaluating the results of root cause analyses (D2-T2, D2-T3)
- Finding sources of information on hazards, threats, and vulnerabilities (D1-T1)
- Interviewing people (D1-T3, D2-T1, D2-T2, D2-T3, D3-T1, D3-T3)
- Organizing chemical process safety information (D3-T1)
- Recommending effective engineering controls (D3-T1)
- Selecting appropriate personal protective equipment (D3-T1)
- Using chemical process safety information (D2-T1)
- Using dispersion modeling software (D2-T1)
- Using monitoring and sampling equipment (D1-T1, D2-T2)

Security Sciences

Subject Areas

Facility Security
Public Safety

Knowledge (Foundation Level)

- Biological hazards (D1-T1)
- Chemical hazards (D1-T2)
- Natural hazards (D1-T4)
- Radiation hazards (D1-T5)
- Structural and mechanical hazards (D1-T6)
- Hazards related to fires and explosions (D1-T7)
- Facility physical security (D2-T2)
- Measurement and monitoring (D2-T1)
- Engineering controls (D2-T2)
- Administrative controls (D2-T3)
- Personal protective equipment (D2-T4)

Knowledge (Advanced Level)

- Chain of custody procedures (D1-T2)
- Competencies of other professionals with whom the safety professional interacts (D1-T1, D1-T3, D1-T4, D2-T2, D2-T3, D3-T1, D3-T3, D3-T4)
- Facility security and access control (D2-T1, D3-T1)
- Incident command methods (D3-T1)
- Incident investigation techniques (D1-T1, D1-T3)
- Information security and confidentiality requirements (D1-T1, D1-T2, D2-T1, D2-T2)
- Methods and techniques for evaluating facilities, products, systems, processes, and equipment (D1-T1, D2-T2)
- Public safety and security (D2-T1, D3-T1)
- Sources of information on hazards, threats, and vulnerabilities (D1-T1, D1-T3, D1-T4)
- Transportation safety and security (D2-T1, D3-T1)
- Types, sources, and characteristics of hazards, threats, and vulnerabilities (D1-T1)
- Workplace violence (D2-T1, D3-T1)

Skills (Advanced Level)

- Calculating maximum occupancy and egress capacity (D2-T1)
- Communicating with subject matter experts (D1-T1, D1-T3, D1-T4, D2-T1, D2-T2, D2-T3, D3-T1, D3-T3, D3-T4)
- Conducting root cause analyses (D2-T1)
- Developing effective administrative controls (D3-T1)
- Developing procedures that incorporate risk management controls (D3-T1)
- Developing safety, health, environmental, and security plans, programs, and policies (D3-T1)
- Evaluating the results of root cause analyses (D2-T2, D2-T3)
- Finding sources of information on hazards, threats, and vulnerabilities (D1-T1)
- Interviewing people (D1-T3, D2-T1, D2-T2, D2-T3, D3-T1, D3-T3)
- Interviewing witnesses to incidents (D1-T1, D1-T3)
- Leading incident investigations (D1-T1, D1-T3)
- Leading threat and vulnerability assessments (D2-T1)
- Preserving evidence from incident investigations (D1-T2)
- Recommending effective engineering controls (D3-T1)
- Recommending facility life safety features (D3-T1)
- Selecting appropriate personal protective equipment (D3-T1)

Fire Sciences

Subject Areas

Fire Prevention

Fire Protection

Fire Suppression

Knowledge (Foundation Level)

- Chemical hazards (D1-T2)
- Electrical hazards (D1-T3)
- Structural and mechanical hazards (D1-T6)
- Hazards related to fires and explosions (D1-T7)
- Measurement and monitoring (D2-T1)
- Engineering controls (D2-T2)
- Administrative controls (D2-T3)
- Personal protective equipment (D2-T4)
- Fire prevention, protection, and suppression (D2-T2)

Knowledge (Advanced Level)

- Fire prevention, protection, and suppression (D2-T1, D3-T1)
- Competencies of other professionals with whom the safety professional interacts (D1-T1, D1-T3, D1-T4, D2-T2, D2-T3, D3-T1, D3-T3, D3-T4)

Skills (Advanced Level)

- Calculating maximum occupancy and egress capacity (D2-T1)
- Communicating with subject matter experts (D1-T1, D1-T3, D1-T4, D2-T1, D2-T2, D2-T3, D3-T1, D3-T3, D3-T4)
- Consulting with equipment manufacturers and commodity suppliers (D1-T1, D1-T4, D2-T1, D2-T2, D3-T1, D3-T3)
- Determining hazardous materials storage requirements (D3-T1)
- Developing effective administrative controls (D3-T1)
- Developing procedures that incorporate risk management controls (D3-T1)
- Developing safety, health, environmental, and security plans, programs, and policies (D3-T1)
- Evaluating facility fire risk (D2-T1)
- Evaluating life safety features in facilities (D2-T1)
- Obtaining information on product certification and listing requirements (D1-T4)
- Recommending effective engineering controls (D3-T1)
- Recommending facility life safety features (D3-T1)
- Selecting appropriate personal protective equipment (D3-T1)
- Using chemical process safety information (D2-T1)
- Using monitoring and sampling equipment (D1-T1, D2-T2)

Measurement and Monitoring

Subject Areas

Exposure Monitoring Protocols

Monitoring Methods

Monitoring Equipment

Knowledge (Foundation Level)

- Methods and techniques for measurement, sampling, and analysis (D2-T1)
- Uses and limitations of monitoring equipment (D2-T1)

Knowledge (Advanced Level)

- Electronic data logging and monitoring equipment (D1-T2)
- Electronic data transfer methods and data storage options (D1-T2)
- Methods and techniques for measurement, sampling, and analysis (D1-T1, D2-T1)

Skills (Advanced Level)

- Calculating statistics from data sources (D1-T2, D1-T3, D1-T4, D2-T3)
- Calibrating and using data logging and monitoring equipment (D1-T2)
- Conducting job safety analyses and task analyses (D1-T1)
- Consulting with equipment manufacturers and commodity suppliers (D1-T1, D1-T4, D2-T1, D2-T2, D3-T1, D3-T3)
- Creating data collection forms (D1-T2)
- Determining occupational exposures (D2-T1)
- Determining statistical significance (D1-T3, D1-T4, D2-T2, D2-T3)
- Interviewing people (D1-T3, D2-T1, D2-T2, D2-T3, D3-T1, D3-T3)
- Maintaining data integrity (D1-T2)
- Using data management software (D1-T2)
- Using monitoring and sampling equipment (D1-T1, D2-T2)
- Using sampling and measurement devices (D3-T1)

Industry-specific Safety Principles

Subject Areas

Safety in Specific Industries

Knowledge (Advanced Level)

- Chemical process safety (D2-T1, D3-T1)
- Construction safety (D2-T1, D3-T1)
- Equipment safety (D2-T1, D3-T1)
- Facility safety (D2-T1, D3-T1)
- Healthcare safety-including patient safety (D2-T1, D3-T1)
- Maritime safety (D2-T1, D3-T1)
- Mining safety (D2-T1, D3-T1)
- Product safety (D2-T1, D3-T1)
- Radiation safety (D2-T1, D3-T1)
- System safety (D2-T1, D3-T1)
- Transportation safety and security (D2-T1, D3-T1)
- Competencies of other professionals with whom the safety professional interacts (D1-T1, D1-T3, D1-T4, D2-T2, D2-T3, D3-T1, D3-T3, D3-T4)

Skills (Advanced Level)

- Calculating statistics from data sources (D1-T2, D1-T3, D1-T4, D2-T3)
- Communicating with subject matter experts (D1-T1, D1-T3, D1-T4, D2-T1, D2-T2, D2-T3, D3-T1, D3-T3, D3-T4)
- Conducting job safety analyses and task analyses (D1-T1)
- Consulting with equipment manufacturers and commodity suppliers (D1-T1, D1-T4, D2-T1, D2-T2, D3-T1, D3-T3)
- Designing effective labels, signs, and warnings (D3-T1)
- Determining hazardous materials storage requirements (D3-T1)
- Facilitating chemical process hazard analyses (D2-T1)
- Interpreting plans, specifications, technical drawings, and process flow diagrams (D2-T1, D2-T2, D3-T1)
- Organizing chemical process safety information (D3-T1)
- Performing facility and equipment inspections (D2-T2)
- Recommending effective engineering controls (D3-T1)
- Selecting appropriate personal protective equipment (D3-T1)
- Using chemical process safety information (D2-T1)
- Working with organized labor unions and management (D3-T4)

Appendix A

Safety Fundamentals Examination Blueprint

Safety Fundamentals Examination Blueprint

BCSP examination blueprints are based on surveys of what safety professionals do in practice. The Safety Fundamentals examination is required for candidates to demonstrate knowledge of professional safety practice at the Associate Safety Professional (ASP) level. The table beginning below and continuing on the next several pages describes the subject matter covered by the Safety Fundamentals examination.

The top four levels, called domains, represent major areas of practice that safety professionals at the ASP level must understand. Within each domain are knowledge topics. For most knowledge topics, there is a list of knowledge areas.

Each domain heading in this table is accompanied by a percentage label. This percentage represents the proportion of the actual Safety Fundamentals examination devoted to that domain.

Safety Fundamentals Examination Domain 1 <i>Recognizing Safety, Health, and Environmental Hazards</i> 35.4%	
Topic 1	
Biological Hazards	
Topic 2	
Chemical Hazards	
Topic 3	
Electrical Hazards	
Topic 4	
Natural Hazards	
Topic 5	Knowledge Areas
Radiation Hazards	<ol style="list-style-type: none"> 1. Ionizing radiation 2. Nonionizing radiation
Topic 6	
Structural and Mechanical Hazards	
Topic 7	
Hazards Related to Fires and Explosions	
Topic 8	Knowledge Areas
Hazards Related to Human Factors and Ergonomics	<ol style="list-style-type: none"> 1. Fitness for duty 2. Manual materials handling 3. Organizational, behavioral, and psychological influences 4. Physical and mental stressors 5. Repetitive activities 6. Workplace violence

**Safety Fundamentals Examination
Domain 2**

Measuring, Evaluating, and Controlling Safety, Health, and Environmental Hazards
30.9%

<p>Topic 1 Measurement and Monitoring</p>	<p>Knowledge Areas</p> <ol style="list-style-type: none"> 1. Methods and techniques for measurement, sampling, and analysis 2. Uses and limitations of monitoring equipment
<p>Topic 2 Engineering Controls</p>	<p>Knowledge Areas</p> <ol style="list-style-type: none"> 1. Dust control 2. Equipment and material handling 3. Excavation shoring 4. Facility physical security 5. Fall protection 6. Fire prevention, protection, and suppression 7. Hazardous energy control 8. Human factors and ergonomic design 9. Mechanical and machine guarding 10. Segregation and separation 11. Substitution and selection of alternative design strategies 12. Ventilation
<p>Topic 3 Administrative Controls</p>	<p>Knowledge Areas</p> <ol style="list-style-type: none"> 1. Accountability 2. Behavior modification 3. Decontamination processes 4. Exposure limitation 5. Fitness for duty 6. Housekeeping 7. Labels 8. Material safety data sheets 9. Safe work permits 10. Training and education 11. Warnings and signs 12. Work zone establishment 13. Written plans, procedures, and work practices
<p>Topic 4 Personal Protective Equipment</p>	<p>Knowledge Areas</p> <ol style="list-style-type: none"> 1. Assessment of need for personal protective equipment 2. Selection and testing of personal protective equipment 3. Usage of personal protective equipment 4. Maintenance of personal protective equipment

Safety Fundamentals Examination

Domain 3

Safety, Health, and Environmental Training and Management

20.6%

Topic 1 Training and Communication Methods	Knowledge Areas <ol style="list-style-type: none">1. Adult learning techniques2. ANSI/ASSE Z490.1 (<i>American National Standard: Criteria for Accepted Practices in Safety, Health, and Environmental Training</i>)3. Behavior modification4. Methods of training delivery5. Methods of training evaluation6. Presentation tools
Topic 2 Management Processes	Knowledge Areas <ol style="list-style-type: none">1. Emergency/crisis/disaster planning and response2. Identification of expert resources3. Incident data collection and analysis4. Techniques for performing incident investigation and root cause analysis
Topic 3 Inspections and Auditing	Knowledge Areas <ol style="list-style-type: none">1. Elements of an inspection and auditing program2. Reasons to perform inspections and audits3. Purpose and objective of ISO 19011 (<i>Guidelines for quality and/or environmental management systems auditing</i>)
Topic 4 Group Dynamics	Knowledge Areas <ol style="list-style-type: none">1. Conflict resolution2. Methods of facilitating teams3. Multidisciplinary teamwork4. Negotiation procedures
Topic 5 Project Management	Knowledge Areas <ol style="list-style-type: none">1. Evaluation of cost, schedule, performance, and risk2. Project management terminology3. Review of specifications and designs against requirements
Topic 6 Risk Management	Knowledge Areas <ol style="list-style-type: none">1. The risk management process2. Risk analysis methods (e.g., job safety analysis, hazard and operability analysis, failure mode and effects analysis, fault tree analysis, what-if/checklist analysis, change analysis)
Topic 7 Safety, Health, and Environmental Management Systems	Knowledge Areas <ol style="list-style-type: none">1. Purpose and objective of ANSI/AIHA Z10 (<i>American National Standard for Occupational Health and Safety Management Systems</i>)2. Purpose and objective of the ISO 14000 series of environmental management system standards3. Purpose and objective of the OHSAS 18000 series of occupational health and safety management system standards4. Purpose and objective of the U.S. Occupational Safety and Health Administration Voluntary Protection Programs

**Safety Fundamentals Examination
Domain 4**

Business Principles, Practices, and Metrics in Safety, Health, and Environmental Practice

13.1%

<p>Topic 1 Basic Financial Principles</p>	<p>Knowledge Areas</p> <ol style="list-style-type: none"> 1. Cost benefit analysis (e.g., calculating, evaluating, and selecting the best alternative) 2. Definition and use of life cycle cost 3. Definition and use of net present value 4. Definition and use of return on investment
<p>Topic 2 Probability and Statistics</p>	<p>Knowledge Areas</p> <ol style="list-style-type: none"> 1. Concepts of probability 2. Normal (Gaussian) distribution: description, calculations, and interpretations 3. Poisson distribution: description, calculations, and interpretations 4. Descriptive statistics: description, calculations, and interpretations (e.g., mean, mode, median, standard deviation, standard error of measurement, variance) 5. Inferential statistics: description, calculations, and interpretations (e.g., t-test, z-test, chi-square test, Pearson product-moment correlation, Spearman's rank correlation, linear regression techniques, confidence intervals, control limits)
<p>Topic 3 Performance Metrics and Indicators</p>	<p>Knowledge Areas</p> <ol style="list-style-type: none"> 1. Lagging indicators (e.g., incidence rates, lost time, direct costs of incidents) 2. Leading indicators (e.g., inspection frequency, number of safety interventions, employee performance evaluations, training frequency, near miss/near hit reporting) 3. Economic effects of losses (e.g., cost per incident) 4. Relationship between cost of losses and the effect on profitability

Appendix B

Comprehensive Practice Examination Blueprint

Comprehensive Practice Examination Blueprint

BCSP examination blueprints are based on surveys of what safety professionals do in practice. The Comprehensive Practice examination is required for candidates to demonstrate knowledge of professional safety practice at the Certified Safety Professional® (CSP®) level. The table beginning below and continuing on the next several pages describes the subject matter covered by the Comprehensive Practice examination.

The top three levels, called domains, represent the major functions performed by safety professionals at the CSP level. Each domain is divided among several tasks. Within each task are lists of knowledge areas and skills necessary for carrying out the task in that domain. The knowledge areas for the Comprehensive Practice examination build upon the knowledge that candidates have already demonstrated by virtue of having passed the Safety Fundamentals examination, or by virtue of having earned one or more allied credentials or university degrees recognized by BCSP.

Each domain heading in this table is accompanied by a percentage label. This percentage represents the proportion of the actual Comprehensive Practice examination devoted to that domain.

<p>Comprehensive Practice Examination Domain 1 <i>Collecting Safety, Health, Environmental, and Security Risk Information</i> 28.6%</p>
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Task 1

Identify and characterize hazards, threats, and vulnerabilities using equipment and field observation methods in order to evaluate safety, health, environmental, and security risk.

Knowledge Areas

1. Types, sources, and characteristics of hazards, threats, and vulnerabilities
2. Job safety analysis and task analysis methods
3. Hazard analysis methods
4. Qualitative, quantitative, deductive, and inductive risk assessment methods
5. Incident investigation techniques
6. Methods and techniques for evaluating facilities, products, systems, processes, and equipment
7. Methods and techniques for measurement, sampling, and analysis
8. Sources of information on hazards, threats, and vulnerabilities (e.g., subject matter experts, relevant best practices, published literature)
9. Competencies of other professionals with whom the safety professional interacts
10. Information security and confidentiality requirements
11. Internet resources

Skills

1. Identifying hazards associated with equipment, manufacturing systems, and production processes
2. Recognizing external and internal threats to facilities, systems, processes, equipment, and employees
3. Conducting job safety analyses and task analyses
4. Performing hazard analyses
5. Leading incident investigations
6. Interviewing witnesses to incidents
7. Interpreting plans, specifications, technical drawings, and process flow diagrams
8. Using monitoring and sampling equipment
9. Communicating with subject matter experts
10. Consulting with equipment manufacturers and commodity suppliers
11. Finding sources of information on hazards, threats, and vulnerabilities
12. Interviewing people
13. Using the Internet to find information

Task 2

Design and use data management systems for collecting and validating risk information in order to evaluate safety, health, environmental, and security risk.

Knowledge Areas

1. Mathematics and statistics
2. Qualitative, quantitative, deductive, and inductive risk assessment methods
3. Chain of custody procedures
4. Electronic data logging and monitoring equipment
5. Data management software
6. Electronic data transfer methods and data storage options
7. Information security and confidentiality requirements

Skills

1. Calculating statistics from data sources
2. Determining statistical significance
3. Comparing statistics to benchmarks
4. Preserving evidence from incident investigations
5. Calibrating and using data logging and monitoring equipment
6. Using data management software
7. Creating data collection forms
8. Maintaining data integrity

Task 3

Collect and validate information on organizational risk factors by studying culture, management style, business climate, financial conditions, and the availability of internal and external resources in order to evaluate safety, health, environmental, and security risk.

Knowledge Areas

1. Mathematics and statistics
2. Qualitative, quantitative, deductive, and inductive risk assessment methods
3. Incident investigation techniques
4. Sources of information on hazards, threats, and vulnerabilities (e.g., subject matter experts, relevant best practices, published literature)
5. Organizational and behavioral sciences
6. Group dynamics
7. Management sciences
8. Management principles of authority, responsibility, and accountability
9. Budgeting, finance, and economic analysis techniques
10. Business planning
11. Competencies of other professionals with whom the safety professional interacts
12. Internet resources

Skills

1. Calculating statistics from data sources
2. Determining statistical significance
3. Comparing statistics to benchmarks
4. Leading incident investigations
5. Interviewing witnesses to incidents
6. Developing surveys to capture data related to organizational culture
7. Communicating with subject matter experts
8. Interviewing people
9. Using the Internet to find information

Task 4

Research applicable laws, regulations, consensus standards, best practices, and published literature using internal and external resources to develop benchmarks for assessing an organization's safety, health, environmental, and security performance and to support the evaluation of safety, health, environmental, and security risk.

Knowledge Areas

1. Benchmarks and performance standards
2. Mathematics and statistics
3. Sources of information on hazards, threats, and vulnerabilities (e.g., subject matter experts, relevant best practices, published literature)
4. Sources of information related to local laws, regulations, and consensus codes and standards
5. Product certification and listing agencies
6. Qualitative, quantitative, deductive, and inductive risk assessment methods
7. Competencies of other professionals with whom the safety professional interacts
8. Internet resources

Skills

1. Calculating statistics from data sources
2. Determining statistical significance
3. Using statistics to define benchmarks and performance standards
4. Comparing statistics to benchmarks
5. Interpreting local laws, regulations, and consensus codes and standards
6. Communicating with subject matter experts
7. Consulting with equipment manufacturers and commodity suppliers
8. Obtaining information on product certification and listing requirements
9. Using the Internet to find information

Comprehensive Practice Examination Domain 2

Assessing Safety, Health, Environmental, and Security Risk

36.6%

Task 1

Evaluate the risk of injury, illness, environmental harm, and property damage to which the public or an organization is exposed associated with the organization's facilities, products, systems, processes, equipment, and employees by applying quantitative and qualitative threat, vulnerability, and risk assessment techniques.

Knowledge Areas

1. Qualitative, quantitative, deductive, and inductive risk assessment methods
2. Root cause analysis methods
3. Mathematics and statistics
4. Basic sciences: anatomy, biology, chemistry, physics, physiology
5. Applied sciences: fluid flow, mechanics, electricity
6. Organizational and behavioral sciences
7. Agriculture safety (including food supply safety)
8. Biological safety
9. Business continuity and contingency planning
10. Chemical process safety
11. Community emergency planning
12. Construction safety
13. Dispersion modeling
14. Emergency/crisis/disaster management
15. Emergency/crisis/disaster response planning
16. Environmental protection and pollution prevention
17. Epidemiology
18. Equipment safety
19. Ergonomics and human factors
20. Facility safety
21. Facility security and access control
22. Facility siting and layout
23. Fire prevention, protection, and suppression
24. Hazardous materials management
25. Hazardous waste management
26. Healthcare safety (including patient safety)
27. Industrial hygiene
28. Infectious diseases
29. Insurance/risk transfer principles
30. Maritime safety
31. Mining safety
32. Multi-employer worksite issues
33. Mutual aid agreements
34. Physical and chemical characteristics of hazardous materials
35. Pressure relief systems
36. Product safety
37. Public safety and security
38. Radiation safety
39. System safety
40. Toxicology
41. Transportation safety and security
42. Ventilation systems
43. Workplace violence
44. Sources of information on risk (e.g., subject matter experts, relevant best practices, published literature)
45. Information security and confidentiality requirements

Skills

1. Leading comprehensive risk assessments
2. Leading threat and vulnerability assessments
3. Facilitating chemical process hazard analyses
4. Conducting root cause analyses
5. Estimating organizational risk
6. Estimating public risk
7. Estimating the risk of human error
8. Using statistics to estimate risk
9. Interpreting plans, specifications, technical drawings, and process flow diagrams
10. Evaluating facility fire risk
11. Evaluating life safety features in facilities
12. Calculating maximum occupancy and egress capacity
13. Calculating required containment volumes and hazardous materials storage requirements
14. Determining how released hazardous materials migrate through the air, surface water, soil, and water table
15. Determining occupational exposures (e.g., hazardous chemicals, radiation, noise, biological agents, heat)
16. Evaluating emergency/crisis/disaster management and response plans
17. Using chemical process safety information
18. Using dispersion modeling software
19. Communicating with subject matter experts
20. Consulting with equipment manufacturers and commodity suppliers
21. Interviewing people

Task 2

Audit safety, health, environmental, and security management systems using appropriate auditing techniques to compare an organization's management systems against established standards for identifying the organization's strengths and weaknesses.

Knowledge Areas

1. Safety, health, and environmental management and audit systems (e.g., ANSI/AIHA Z10, ISO 14000 series, OHSAS 18000 series, ISO 19011, U.S. Occupational Safety and Health Administration Voluntary Protection Programs)
2. Management system auditing techniques
3. Benchmarks and performance standards
4. Methods and techniques for evaluating facilities, products, systems, processes, and equipment
5. Methods and techniques for measurement, sampling, and analysis
6. Qualitative, quantitative, deductive, and inductive risk assessment methods
7. Root cause analysis methods
8. Mathematics and statistics
9. Basic sciences: anatomy, biology, chemistry, physics, physiology
10. Applied sciences: fluid flow, mechanics, electricity
11. Organizational and behavioral sciences
12. Management sciences
13. Management principles of authority, responsibility, and accountability
14. Budgeting, finance, and economic analysis techniques
15. Business continuity and contingency planning
16. Business planning
17. Business software
18. Change management
19. Emergency/crisis/disaster management
20. Emergency/crisis/disaster response planning
21. Group dynamics
22. Hazardous materials management
23. Hazardous waste management
24. Job safety analysis and task analysis methods
25. Multi-employer worksite issues
26. Report presentation strategies
27. Competencies of other professionals with whom the safety professional interacts
28. Sources of information on hazards, threats, and vulnerabilities (e.g., subject matter experts, relevant best practices, published literature)
29. Information security and confidentiality requirements
30. Internet resources

Skills

1. Leading management system audits
2. Comparing management systems with benchmarks
3. Comparing documented procedures and tasks with actual operations
4. Evaluating safety, health, environmental, and security plans, programs, and policies
5. Evaluating risk assessments
6. Evaluating the results of root cause analyses
7. Recognizing external and internal threats to facilities, systems, processes, equipment, and employees
8. Interpreting plans, specifications, technical drawings, and process flow diagrams
9. Recognizing management system changes
10. Using monitoring and sampling equipment
11. Determining statistical significance
12. Comparing statistics to benchmarks
13. Performing facility and equipment inspections
14. Evaluating business continuity and contingency plans
15. Communicating with subject matter experts
16. Consulting with equipment manufacturers and commodity suppliers
17. Using business software to present reports
18. Interviewing people
19. Using the Internet to find information

Task 3

Analyze trends in leading and lagging performance indicators related to safety, health, environmental, and security management systems using historical information and statistical methods to identify an organization's strengths and weaknesses.

Knowledge Areas

1. Types of leading and lagging safety, health, environmental, and security performance indicators
2. Benchmarks and performance standards
3. Safety, health, and environmental management and audit systems (e.g., ANSI/AIHA Z10, ISO 14000 series, OHSAS 18000 series, ISO 19011, U.S. Occupational Safety and Health Administration Voluntary Protection Programs)
4. Management system auditing techniques
5. Mathematics and statistics
6. Organizational and behavioral sciences
7. Management sciences
8. Management principles of authority, responsibility, and accountability
9. Budgeting, finance, and economic analysis techniques
10. Business planning
11. Business software
12. Change management
13. Competencies of other professionals with whom the safety professional interacts
14. Training assessment instruments (e.g., written tests, skill assessments)

Skills

1. Using statistics to show trends in performance indicators
2. Calculating statistics from data sources
3. Using statistics to define benchmarks and performance standards
4. Communicating with subject matter experts
5. Comparing statistics to benchmarks
6. Determining statistical significance
7. Evaluating management system audits
8. Evaluating risk assessments
9. Evaluating safety, health, environmental, and security plans, programs, and policies
10. Evaluating the results of root cause analyses
11. Interpreting organizational culture surveys and perception surveys
12. Measuring training program effectiveness
13. Recognizing management system changes
14. Using business software to present reports
15. Interviewing people
16. Obtaining meaningful feedback

**Comprehensive Practice Examination
Domain 3**

Managing Safety, Health, Environmental, and Security Risk

34.8%

Task 1

Design effective risk management methods using the results of risk assessments to eliminate or reduce safety, health, environmental, and security risks.

Knowledge Areas

1. Engineering controls
2. Principles of managing risk throughout the design process
3. Administrative controls
4. Personal protective equipment
5. Qualitative, quantitative, deductive, and inductive risk assessment methods
6. Root cause analysis methods
7. Risk-based decision-making tools
8. Mathematics and statistics
9. Applied sciences: fluid flow, mechanics, electricity
10. Basic sciences: anatomy, biology, chemistry, physics, physiology
11. Organizational and behavioral sciences
12. Management sciences
13. Management principles of authority, responsibility, and accountability
14. Budgeting, finance, and economic analysis techniques
15. Business planning
16. Business software
17. Adult learning
18. Cultural norms and population stereotypes
19. Training methods
20. Training assessment instruments (e.g., written tests, skill assessments)
21. Agriculture safety (including food supply safety)
22. Biological safety
23. Business continuity and contingency planning
24. Change management
25. Chemical process safety
26. Community emergency planning
27. Construction safety
28. Education and training methods
29. Emergency/crisis/disaster management
30. Emergency/crisis/disaster response planning
31. Employee assistance programs
32. Employee/stakeholder incentive programs
33. Environmental protection and pollution prevention
34. Epidemiology
35. Equipment safety
36. Ergonomics and human factors
37. Facility safety
38. Facility security and access control
39. Facility siting and layout
40. Fire prevention, protection, and suppression
41. Hazardous materials management
42. Hazardous waste management
43. Healthcare safety (including patient safety)
44. Incident command methods
45. Industrial hygiene
46. Infectious diseases
47. Insurance/risk transfer principles
48. Labels, signs, and warnings (including international symbols)
49. Maritime safety
50. Mining safety
51. Multi-employer worksite issues
52. Mutual aid agreements
53. Physical and chemical characteristics of hazardous materials

Skills

1. Recommending effective engineering controls
2. Developing effective administrative controls
3. Developing procedures that incorporate risk management controls
4. Developing safety, health, environmental, and security plans, programs, and policies
5. Designing effective labels, signs, and warnings
6. Performing training needs assessments
7. Developing training programs
8. Developing training assessment instruments
9. Applying risk-based decision-making tools for prioritizing risk management options
10. Interpreting plans, specifications, technical drawings, and process flow diagrams
11. Creating emergency/crisis/disaster management and response plans
12. Performing financial analyses of risk management options
13. Evaluating the costs and benefits of risk management options
14. Organizing chemical process safety information
15. Performing gap analyses
16. Determining hazardous materials storage requirements
17. Recommending facility life safety features
18. Recommending methods to reduce the risk of occupational exposures (e.g., hazardous chemicals, radiation, noise, biological agents, heat)
19. Reducing the risk of error-likely situations
20. Selecting appropriate personal protective equipment
21. Using sampling and measurement devices
22. Using statistics to understand risk
23. Using the results of risk assessments to support risk management options
24. Using the results of root cause analyses to support risk management options
25. Communicating with subject matter experts
26. Consulting with equipment manufacturers and commodity suppliers
27. Interviewing people

Task 1 (CONTINUED)

Design effective risk management methods using the results of risk assessments to eliminate or reduce safety, health, environmental, and security risks.

Knowledge Areas (CONTINUED)

54. Pressure relief systems
55. Product safety
56. Public safety and security
57. Radiation safety
58. System safety
59. Toxicology
60. Transportation safety and security
61. Ventilation systems
62. Workplace violence
63. Competencies of other professionals with whom the safety professional interacts
64. Sources of information on risk management options (e.g., subject matter experts, relevant best practices, published literature)

Task 2

Educate and influence decision makers to adopt effective risk management methods by illustrating the business-related benefits associated with implementing them to eliminate or reduce safety, health, environmental, and security risks.

Knowledge Areas

1. Risk-based decision-making tools
2. Budgeting, finance, and economic analysis techniques
3. Business planning
4. Business software
5. Education and training methods
6. Interpersonal communications
7. Mathematics and statistics
8. Organizational and behavioral sciences
9. Management sciences
10. Management principles of authority, responsibility, and accountability
11. Organizational protocols
12. Presentation media and technologies
13. Presentation strategies
14. Project management concepts
15. Target audience background

Skills

1. Applying risk-based decision-making tools for prioritizing risk management options
2. Creating plans for implementing risk management options
3. Describing the costs and benefits of risk management options
4. Describing the effects of implementing safety, health, and environmental plans, programs, and policies
5. Describing trends to support risk management options
6. Explaining risk management options to decision makers
7. Making presentations to decision makers
8. Presenting financial analyses of risk management options
9. Recognizing changes needed in management systems
10. Using statistics to explain the effects of risk management options
11. Using the results of risk assessments to support risk management options
12. Using the results of root cause analyses to support risk management options

Task 3

Lead projects to implement the risk management methods adopted by decision makers using internal and external resources to eliminate or reduce safety, health, environmental, and security risks.

Knowledge Areas

1. Project management concepts
2. Management sciences
3. Management principles of authority, responsibility, and accountability
4. Methods of achieving project stakeholder acceptance of project goals
5. Financial management principles
6. Schedule management principles
7. Risk-based decision-making tools
8. Organizational and behavioral sciences
9. Business software
10. Project management software
11. Change management
12. Group dynamics
13. Interpersonal communications
14. Methods of facilitating teamwork
15. Organizational protocols
16. Presentation media and technologies
17. Presentation strategies
18. Principles of supervising people
19. Competencies of other professionals with whom the safety professional interacts

Skills

1. Implementing project management plans
2. Applying management principles of authority, responsibility, and accountability
3. Using project management software
4. Developing systems to track project implementation
5. Leading people
6. Leading teams
7. Making presentations to stakeholders
8. Motivating project stakeholders
9. Resolving conflicts
10. Supervising people
11. Communicating with subject matter experts
12. Consulting with equipment manufacturers and commodity suppliers
13. Interviewing people

Task 4

Promote a positive organizational culture that is conscious of its safety, health, environmental, and security responsibilities by communicating these responsibilities to all stakeholders and by training all stakeholders as part of the organization's overall risk management program.

Knowledge Areas

1. Management sciences
2. Management principles of authority, responsibility, and accountability
3. Methods of achieving project stakeholder acceptance of project goals
4. Organizational and behavioral sciences
5. Organizational protocols
6. Cultural norms and population stereotypes
7. Group dynamics
8. Interpersonal communications
9. Labels, signs, and warnings (including international symbols)
10. Multi-employer worksite issues
11. Organized labor/management relations
12. Presentation media and technologies
13. Presentation strategies
14. Protocols for public announcements
15. Public communication techniques
16. Risk communication techniques
17. Stakeholder participation committees
18. Target audience background
19. Adult learning
20. Education and training methods
21. Behavior modification techniques
22. Training methods
23. Training assessment instruments (e.g., written tests, skill assessments)
24. Business communication software
25. Competencies of other professionals with whom the safety professional interacts
26. Standards development processes
27. Information security and confidentiality requirements

Skills

1. Explaining risk concepts to stakeholders and the public
2. Explaining risk management options to stakeholders and the public
3. Applying management principles of authority, responsibility, and accountability
4. Encouraging participation in risk management processes
5. Influencing stakeholder behavior
6. Developing and using lesson plans
7. Conducting training
8. Administering training assessment instruments
9. Providing an effective learning environment
10. Delivering motivational presentations
11. Creating motivational literature
12. Facilitating stakeholder participation committees
13. Giving public announcements
14. Interacting with journalists and the media
15. Making presentations to stakeholders and the public
16. Negotiating with political entities
17. Resolving conflicts
18. Soliciting stakeholder feedback
19. Working with organized labor unions and management
20. Motivating stakeholders
21. Leading people
22. Leading teams
23. Exchanging information over the Internet
24. Communicating with subject matter experts
25. Interviewing people
26. Providing input in standards development activities