

Request for Proposals for
Certified Mine Safety Professional Short Course
Submission Deadline: April 12, 2019

The Society for Mining, Metallurgy & Exploration (SME) has launched a Certified Mine Safety Professional (CMSP) certification. To become certified, interested parties must meet experience criteria, agree to abide by a code of practice and pass a 100-question multi-choice exam. The exam covers a Body of Knowledge outlined by industry subject matter experts. More information of the CMSP program can be found at www.smecmsp.org.

SME is seeking proposals for the development of a Short Course to help candidates review the Body of Knowledge. This course will:

- Consist of a high-level review of content outlined in the CMSP Body of Knowledge
- Taken in a face-to-face setting and include:
 - Presentation materials (PowerPoint or equivalent and speaker's notes)
 - Participant study aids (Handouts)
- Be up to 3 days in length (24-hours of content)
- Be pilot tested in 2019

Expectations for the proposal are as follows:

- Cost of effort identified upfront with delivery timeline and description of deliverables.
- At the complementation of the development period, SME will own and administer the course following standard course protocol.
- Proposal is due on April 12, 2019.
- Review and decisions to move forward will be made by April 30.

The following background information has been provided on the program:

- Body of Knowledge
- Reference List
- SME Short Course Protocol

Proposals for consideration must be received by Friday, April 12. Send proposals to Tara Davis, SME Manager of Professional Development at davis@smenet.org. For more information, call 303-948-4215.

CERTIFIED MINE SAFETY PROFESSIONAL BODY OF KNOWLEDGE

A Body of Knowledge (BoK) represents a collection of knowledge and skills within a profession that are generally known to its members and recognized as essential in the profession's practice. The Certified Mine Safety Professional (CMSP) BoK has been developed by subject matter experts from across the spectrum of mining commodities, methods, mine size, and geographical distribution worldwide. It was validated through a Job Assessment Survey conducted across a second set of practicing, mining safety and health, subject matter experts. The Board of Directors of International Academy of Mine Safety & Health of the Society for Mining, Metallurgy & Exploration (IAMSH of SME) believe the CMSP BoK is most relevant as a reflection of the potential scope of practice for mine safety and health professionals, rather than just a tool to facilitate preparation for the CMSP examination. This is especially true for those committed to sustainable, safety and health management excellence. Relative to the examination, the weighting of the BoK domains remain fixed until a subsequent revision. The domains are reflective and not prescriptive.

I. FUNDAMENTAL KNOWLEDGE OF SCIENCE & ENGINEERING:

10 QUESTIONS

A. Science & Mathematics

2 questions

1. Mathematics & statistics
2. Chemistry
3. Physics
4. Toxicology
5. Human anatomy & physiology
6. Psychology

B. Mining

4 questions

1. Mining life cycle
2. Mining methods
3. Mining equipment
4. Mining processes

C. Mining Engineering

4 questions

1. Fundamentals of mining geology
2. Fundamental mining engineering principles
3. Mine planning
4. Mining ventilation
5. Ground control plans, principles and methods
6. Fundamentals of rock mechanics

II. LEADERSHIP, ORGANIZATION & CULTURE:

15 QUESTIONS

A. Leadership

4 questions

1. Key leadership models
2. Leadership styles
3. Management vs leadership activities
4. Leadership competencies linked to safety
5. Leadership development
6. Linkage to culture & climate
7. Assessment of leadership problems

B. Culture

3 questions

1. Fundamentals of safety culture
2. Culture/climate assessment/measurement
3. Culture enhancement

C. Loss Control and Economics

4 questions

1. Basic mining economics & terminology
2. Modeling direct & indirect loss

D. Responsibility & Accountability

4 questions

1. Differentiating responsibility & accountability
 2. Applying responsibility & accountability to S&H management
 3. Discipline (versus responsibility & accountability)
 4. Management by objectives
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III. SAFETY, HEALTH & RISK MANAGEMENT:

50 QUESTIONS

A. Risk Management

12 questions

1. Mining-specific hazards
2. Non-specific hazards
3. Energy sources
4. Hazard identification techniques
5. Situational awareness
6. Risk assessment approaches & techniques
7. Risk controls
8. Fatal risk management principles
9. Characteristics of risk
10. Acceptable risk
11. Safe operations procedures
12. Hierarchy of control
13. Personal protective equipment
14. Risk control verification
15. Management of change

B. Human Factors/Behavior**8 questions**

1. Key theories of human behavior
2. Key elements of human error
3. Assessment of error & at-risk behavior
4. Error & behavior measurement
5. Error mitigation techniques
6. Behavior modification techniques
7. Mobile equipment design
8. Fixed equipment design
9. Fatigue & alertness assurance
10. Fitness for duty

C. Occupational Hygiene**4 questions**

1. Basic principles of occupational hygiene
2. Methods of exposure assessment
3. Occupational Exposure Limits (OELs)
4. Exposure assessment data analysis

D. Occupational Health**4 questions**

1. Basics principles of occupational medicine
2. Linkage between exposure & dysfunction
3. Mining-specific occupational disease
4. Non-specific occupational disease (e.g., NIHL)
5. Medical surveillance
6. Working with health professionals & other stakeholders
7. Principles of ergonomics
8. Ergonomic risk assessment
9. Ergonomic risk mitigation

E. Education, Training & Competency**7 questions**

1. Adult learning theory
2. Education & training methods
3. Education & training needs assessment
4. On-the-job training, safe work instruction, task training
5. Competency verification
6. Training & education effectiveness assessment

F. Emergency & Crisis Management**7 questions**

1. Emergency preparedness & response
2. Mine rescue organization & training
3. Incident management & communication

G. Incident Reporting & Investigation**8 questions**

1. Incident definitions & categorization
 2. Near miss reporting, investigation & analysis
 3. Incident investigation techniques
 4. Root cause analysis techniques
 5. Key models & theories
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IV. MANAGEMENT SYSTEMS, REGULATION & ASSURANCE:**15 QUESTIONS****A. Management Systems****10 questions**

1. Principles of safety management systems
2. Governance, structure & functionality
3. Consensus management system standards
4. Management system metrics
5. Management system auditing
6. Continuous improvement principles

B. Regulation & Legislation**5 questions**

1. Regulatory requirements of area(s) of responsibility for H&S professional
 2. Integrating management systems & regulation
 3. Techniques for regulatory compliance
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V. PROFESSIONAL SKILLS, CONDUCT & ETHICS:**10 QUESTIONS****A. Professional Skills****8 questions**

1. Strategy development & program management
2. Persuasion (ability to influence opinion)
3. Inter-personal communication (verbal, non-verbal and written)
4. Project management
5. Personnel & performance management
6. Interpreting relevant safety & health research
7. Using information technology (hardware & software for S&H)
8. Data analysis, trending, interpretation & action (upon)
9. Time management
10. Problem-solving
11. Delegation
12. Managing up
13. Networking & collaboration
14. Advocacy (internal & external)
15. Recognition & reinforcement

B. Professional Ethics**2 questions**

1. Related codes of ethics



CERTIFIED MINE SAFETY PROFESSIONAL EXAM REFERENCES

KEY REFERENCES

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2006 - Mine Improvement and New Emergency Response Act (MINER Act)

1977 - Federal Mine Safety and Health Act (Mine Act)

1969 - Federal Coal Mine Health and Safety Act (Coal Act)

1966 - Federal Metal and Nonmetallic Mine Safety Act

1952 - Federal Coal Mine Safety Act Note: Laws are on MSHA.gov website and published in 30CFR Parts 1-199

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- Roughton, J. E., & Mercurio, J. J. *Developing an Effective Safety Culture: A Leadership Approach*, 2002.
- SME, *SME Mining Engineering Handbook*. SME 2011, 3rd Edition.

MISCELLANEOUS ADDITIONAL REFERENCES

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Bise, C. *Mining Engineering Analysis, 2nd Ed.* SME.

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Sellers, Gordon and Chris Marsh. "Using Behavior-based Methods to Improve Organizational Effectiveness".
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SME SHORT COURSE PROPOSAL FORM

Building the Standard for Professional Development

The Society for Mining, Metallurgy, and Exploration advances the worldwide mining and minerals community through information exchange and professional development.

SME is the world's largest society for mineral professionals. Today, SME's more than 13,000 members represent all professions serving the mineral industry including metallurgists; geologists; underground construction, aggregates, chemists; economists; environmental; health and safety; business and management and of course, mining engineers.

SME produces numerous short courses in response to current needs across the industry. These courses are taught by acknowledged leaders in the subject field and are designed to have immediate application.

SME's Role

- promotion/advertising
- venue
- audio-visual
- food and beverage
- registration
- course materials - reproduction

Instructor's Role

- coordinates instructing team
- writes and coordinates course notes
- produces course presentation

Short Course Budgets

SME Short Courses are budgeted to break even on direct expenses only with 20 member registrants. Instructors are reimbursed for travel, per diem, and honorarium for the following number of instructors:

3-Day Course = 3 Instructors

2-Day Course = 2 Instructors

1-Day Course = 1 Instructor

Please note that any number of instructors may be used for any course, however, SME can only provide reimbursement for the specified number per course day.

Instructor Reimbursement Arrangement

Short courses are budgeted to break even on direct expenses only (excluding staff time and overhead) with 20 member registrants.

Course budgets are broken into five major categories which require input from the course instructors: Travel, per diem, honorarium, course notes, and audio-visual equipment rental. Budget categories are as follows:

Travel

Travel is calculated either of two ways: actual air travel expense or mileage per SME travel policy guidelines. The maximum air fare per instructor is \$500.

Per Diem

Per diem is \$100 per course day to include one day before and one day after the course for each allocated instructor as follows:

1-Day Course = \$300

2-Day Course = \$400

3-Day Course = \$500

Honorarium

- a) up to 20 registrants - instructors share \$300 per course day
- b) 21-30 registrants - instructors share 30% of the net surplus per member registrants (member registration fee minus variable cost per registrant).
- c) 31++ registrants - instructors share 20% of the net surplus per member registrant (member registration fee minus variable cost per registrant).

Examples:

Course Title	# of Registrants	Additional Honorarium	Total Honorarium
Intro Geostatistics and Mine Planning	25	\$598.85	\$1,498.85
Metallurgical Aspects of Operating Precious Metal Heap Leach Projects	41	\$2,001.27	\$2,901.27
Methods of Cyanide Analysis for Process and Environmental Purposes	20	NA	\$600 (2-Day Course)

Course Notes and Audio-visual

Notes and AV rental are budgeted on the basis of anticipated direct expenses.

Cancellation Policy

Courses that do not have 20 registrants as of the official registration deadline are subject to cancellation.

How Courses are Selected

SME has a limit to the number of short courses presented at any given time. Every course proposal submitted is considered. Course proposals for the SME Annual Meeting are due by May 31 of the year prior to the meeting. Proposals for other meetings or independents are considered on a course-by-course basis. The SME Board of Directors selects courses for presentation based on the continuing education needs of the membership and financial ramifications.

SME Short Course Note Series

SME is interested in publishing the notes used in its short courses for general distribution for the following reasons:

- The dissemination of technology is the primary goal of the SME.
- These publications enhance the demand for repeating the course.
- Publication and dissemination of notes has appeal to many short course instructors.

The Course Note Series is not a peer-reviewed publication and includes the following requirements:

- The notes must have continuity. Reproduction of slides with short notation will not be considered. Ideally, the best notes will parallel a typical instruction manual.
- Use of logos, trademarks, etc., is not permitted.
- A statement of right to use for all materials published is required of all authors.
- The Series will be designed to be reproduced inexpensively and quickly.

Any instructors interested producing a title for the Short Course Note Series should contact Tara Davis regarding approvals, deadlines and reproduction requirements.

PLEASE PROVIDE THE FOLLOWING INFORMATION

- 1. Name of Course as you wish it to appear in all advance publicity**

- 2. Course description/overview. Please be specific. Your description should quickly and simply identify why this course is of value and should answer the following questions; course objective, for whom the course is designed, types of background registrant should have to successfully participate in the course, any special requirements or supplies needed.**

- 3. Course content by day. Include specific subject matter to be covered each course day.**

- 4. Required audio-visual, other than standard. Standard audio-visual includes: standing lighted lectern, 2 x 2 35 mm slide projector, overhead projector, screen and electric pointer. Please be certain to indicate ANY needs other than these especially computer equipment.**

- 5. What types of course notes will you be using? Any book or publications from an outside publisher? Please list and estimate expenses. If you are preparing your own notes, estimate number of pages and any special production considerations (binding, color copies...).**
- 6. Please list all course instructors. Include full name, employer, address, city, state, zip, phone, fax, and e-mail.**

7. Additional Comments

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