

Program of Instruction

Course Syllabus

Course Title: Grain Bin Rescue Operations

Course Duration: 40 Hours

Program: Special Operations Training Program

Course Prerequisites: None

Target Audience: This course is designed for emergency first responders. First responders are those who respond in the event of a 911 emergency response.

Course Description: This course is designed for emergency first responders. First responders are those who respond in the event of a 911 emergency response. The scope of this course is to educate students about grain storage facility types, their construction, and operating features. OSHA regulations, physical-environmental hazards and potential rescue resources are identified to ensure the response falls within the requirements minimizing fire department civil or criminal liability. Scene management and safety are discussed in conjunction with locating, securing, packaging, and moving the victim. Improvised mechanical advantage systems, high point anchors, and retrieval systems will be demonstrated. The class also covers safe patient assessment, stabilization, protection and packaging, plus removal as a part of rescue simulations. Various cutting tools are used in a simulated rescue to assist in the removal of grain from the system. Upon completion of this class the student will possess the ability to function as a member of a rescue team conducting rescue and entry operations at a grain storage facility. *Note: this course is specifically designed and targeted only for entry into grain bins. Training and entry into other confined spaces are covered in other courses.*

Course Requirements and/or Recommendations: These can be divided into three categories: those completed prior to arriving in class (Pre-Course Work), those completed during class, such as homework assignments and quizzes (Course Work), and requirements completed after class but prior to receiving a certificate of completion. (Post-Course Work)

Summary of Directions

Pre-Course Work: None

Course Work:

- Attend and participate 100% of the course.

Post-Course Work: None

Course Policies:

Safety Policy: Students shall understand and follow all instructions pertaining to operational safety, as stated by instructors or as written in course materials. Instructors and students shall be mindful of safety at all times. Conduct judged to be unsafe shall be grounds for dismissal from the course. See Safety Rules for Confined Space Courses.

Academic Integrity Policy: IFSI has the responsibility for maintaining academic integrity so as to protect the quality of the education provided through its courses, and to protect those who depend upon our integrity. It is the responsibility of the student to refrain from infractions of academic integrity, from conduct that may lead to suspicion of such infractions, and from conduct that aids others in such infractions. Any violation of the code of conduct is grounds for immediate dismissal from the course.

Grading Policy: Decisions regarding certificates of course completion shall be made solely by the lead instructor of the course. All grading of exams shall be conducted by the Curriculum/Testing Office. All grading of practical exercises shall be based upon the standards set by the regulatory agency referenced in the course material and IFSI.

Attendance Policy: IFSI requires students to attend (100%) or make up all course content that leads to certification. Students are expected to attend on time and to remain in class for the duration of the course. Students **MUST COMPLETE** all portions of a certification course, both classroom and practical, to be eligible to receive their certification.

If a student misses any portion of class with an accumulated absence of 20% or less of scheduled class time, it will be the student's responsibility to arrange the make-up of the missed course content with the instructor(s) or program manager. The student must make up the specific course content that s/he missed, not just the hours. Make-ups are limited to 20% of scheduled class time. Make-ups must be documented on the class roster. If a student's absence is greater than 20% refer to "True Emergences" section of the IFSI Examination Policy.

American Disabilities Act: As guaranteed in the Vocational Rehabilitation Act and in the American Disabilities Act, if any student needs special accommodations they are to notify their instructor and provide documentation as soon as possible so arrangements can be made to provide for the student's needs. If arrangements cannot be made at the class site, the student will test at an alternative time and place where the special accommodations can be made.

Evaluation Strategy: Written and practical skill testing is conducted at the completion of the course.

Course Content:

Module: 1

Title: Introduction

Terminal Learning Objectives:

At the conclusion of this module the student will explain the reasons that grain bin rescues require specialized training and techniques.

Module: 2

Title: Grain Bin Rescue and the Law

Terminal Learning Objectives:

At the conclusion of this module, the student will identify the applicable requirements and regulations pertaining to grain bin rescue.

Module: 3

Title: Grain Handling & Storage Facility Construction

Terminal Learning Objective:

At the conclusion of this module the student will identify the types of grain handling and storage facilities, as well as, the possible rescue challenges presented with each type.

Module: 4

Title: Safety & Personal Protective Equipment

Terminal Learning Objectives:

At the conclusion of this module, the student will apply safety rules and use the proper protective equipment to perform tasks safely at a grain bin rescue incident.

Module: 5

Title: Rope

Terminal Learning Objectives:

At the conclusion of this module, the student will summarize characteristics of rope used in grain bin rescue.

Module: 6

Title: Knots

Terminal Learning Objectives:

At the conclusion of this module, the student will summarize characteristics of knots used in grain bin rescue.

Module: 7

Title: Webbing

Terminal Learning Objective

At the conclusion of this module, the student will use webbing for conducting grain bin rescue operations.

Module: 8

Title: Ancillary Equipment

Terminal Learning Objective

At the conclusion of this module, the student will explain the use of ancillary rope equipment for conducting grain bin rescue operations.

Module: 9

Title: Anchors

Terminal Learning Objective:

At the conclusion of the module, the student will construct anchor systems for grain bin rescue.

Module: 10

Title: Belay Systems

Terminal Learning Objective

At the conclusion of this module, the student will operate a belay system.

Module: 11

Title: Haul Systems

Terminal Learning Objective:

At the conclusion of this module, the student will operate haul systems.

Module: 12

Title: Hazard Recognition

Terminal Learning Objective: At the conclusion of this module the student will explain the physical and environmental hazards encountered by both victims and rescuers during a grain bin rescue operation and identify the proper techniques to properly protect them at a rescue incident involving a grain storage facility.

Module: 13

Title: Types of Entrapment

Terminal Learning Objective: At the conclusion of this module the student will explain the three types of grain entrapment in order to identify the appropriate rescue techniques to use in each situation.

Module: 14

Title: Patient Packaging

Terminal Learning Objectives:

At the conclusion of this module, the student will package a patient involved in a grain bin rescue.

Module: 15

Title: Rescue Operations

Terminal Learning Objectives: At the conclusion of this module, the student will use the Incident Management System and related components as it pertains to grain bin rescue.

Module: 16

Title: Practical Scenario's

Terminal Learning Objective:

At the conclusion of this module, the students will have conducted simulated rescues using techniques and equipment needed to properly perform a grain bin rescue.

Module: 17

Title: High-angle Lowering Operations

Terminal Learning Objective:

At the conclusion of the module, the student will operate a lowering system in a high-angle environment including a belay system.

Reference:

Equipment manufacturer's instructions

Browne, George J., and Crist, Gus S. *Confined Space Levels I and II*, 2010
Delmar Publishers.

Emergency Responder Guidelines, *ODP 2002*

Emergency Response to Terrorism-Job Aid, *FEMA 2000*

Emergency Response to Terrorism- Basic Concepts, *FEMA 2002*

Graham, Judith. (2011, March 8). Drowned in Corn: Grain bin deaths hit record.
[Electronic Version]. *Chicago Tribune*.

IFSI Confined Space Rescue, Field Operation Guide, September 2015

IFSI Rope Rescue Technician, Field Rope Operation Guide, August 2014, 2nd
Edition

Issa, S., Cheng, Y.H. and W.E. Field. (February, 2016). 2015 Summary of U.S.
Agricultural Confined Space-Related Injuries and Fatalities. Retrieved November
15, 2016, from
https://extension.entm.purdue.edu/grainsafety/pdf/Space_Confined_Summary_2015.pdf

NFPA, Fire Protection Guide to Hazardous Materials, 2001 ed.

NFPA 1001 – Standard on Fire Fighter Professional Qualifications, 2013 Edition

NFPA 1006 – Standard for Technical Rescuer Professional
Qualifications, 2013 Edition

NFPA 1500 – Protective Clothing and Protective Equipment, 2013 Edition

NFPA 1670 – Standard on Operations and Training for
Technical Search and Rescue Incidents, 2014 Edition

NFPA 1983 – Standard on Life Safety Rope and Equipment for Emergency
Services, 2012 Edition

OSHA 29 CFR 1910.120 – Hazardous Materials

OSHA 29 CFR 1910.132 – PPE General Requirements

OSHA 29 CFR 1910.134 – Respiratory Protection

OSHA 29 CFR 1910.146 – Permit-required Confined Spaces

OSHA 29 CFR 1910.147 – Control of Hazardous Energy (LO/TO)

OSHA 29 CFR 1910.156 – Fire Brigades

OSHA 29 CFR 1910.272 – Grain Handling Facilities

OSHA 29 CFR 1910.1000 - Air Contaminants

Occupational Safety and Health Administration. (October 19, 2011). *Hazard Alert: Dangers of Engulfment and Suffocation in Grain Bins*. Retrieved November 7, 2012, from http://www.osha.gov/SLTC/grainhandling/hazard_alert.html

High Angle Rescue Techniques, Third Edition 2004, Tom Vines and Steve Hudson

High Angle Rope Rescue Techniques Levels I & II, Fourth Edition 2016, Tom Vines and Steve Hudson

On Rope, New Revised Edition 1996, Allen Padgett and Bruce Smith

The Ashley Book of Knots, Clifford W. Ashley, 1944

Engineering Practical Rope Rescue Systems, Michael G. Brown, 2000

CMC Rope Rescue Manual, Fourth Edition New revised, 2013

U.S. Manual of Cave Rescue, National Speleological Society

Rope Levels I and II, Jeff Matthews 2009

Skedco 4 to 1 Rigging Diagram. Retrieved November 21, 2016 from <https://skedco.com/wp-content/uploads/2014/09/Skedco-4-to-1-rigging-diagram.pdf>

Class Schedule

Day 1

Module 1	Introduction	15 minutes
Module 2	Grain Bin Rescue and the Law	45 minutes
Module 3	Grain Handling & Storage Facility Const.	30 minutes
Module 4	Safety & Personal Protective Equipment	30 minutes
Module 5	Rope	30 minutes
Module 6	Knots	30 minutes
Module 7	Webbing	30 minutes
Module 8	Ancillary Equipment	30 minutes

Day 2

Equipment Review and Knot Practice

Module 9	Anchors	30 minutes
Module 10	Belay	30 minutes
Module 11	Haul Systems	1 hour
Practical Exercises	PPE Donning Drill 4.1	15 minutes
	Knot Drill 6.1	1 hour
	Webbing & Anchor Straps Drill 9.1	15 minutes
Practical Exercises	3:1 Inline Block and Tackle Drill 11.1	45 minutes

Lunch

Day 2 (continued)

	3:1 Attached Block and Tackle Drill 11.2	45 minutes
	4:1 Inline 4 pulley B & T Drill 11.3	45 minutes
Module 12	Hazard Recognition	1 hour
Module 13	Types of Entrapment	30 minutes
Practical Exercises		
	Monitoring Drill 12.1	15 minutes
	Ventilation Drill 12.2	15 minutes
	Isolation Drill 12.3	15 minutes

Day 3

Equipment Review and Knot Practice

Module 14	Patient Packaging	30 minutes
Module 15	Rescue Operations	1 hr 30 min
	Tabletop Scenarios	1 hour
Practical Exercises		
	Hasty Harness Drill 7.1	15 minutes
	Patient Packaging Drill 14.1	45 minutes

Lunch

Practical Exercises

Constructing/Operating belay Drill 10.1	1 hour
High-angle Lowering Drill 17.1	1 hour
Making the "V" Cut Drill 15.2	1 hour
Grain Rescue Tube Drill 15.3	1 hour

Day 4

Equipment Review and Knot Practice

Practical Exercises

Vertical Ladder Jib Drill 9.2	2 hours
Entry Procedures Drill 15.1	2 hours

Day 5

Module 15 Practical Scenarios

Partially Submerged Scenario 16.1	4 hours
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Lunch

Completely Submerged Scenario 16.2	4 hours
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Day 6

Practical Evaluations

Final Scenarios 16.3	6 hours
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Lunch

Final quiz and CEQ's	2 hours
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