

	Northeastern Illinois Public Safety Training Academy	
	Course Syllabus	205

Title: Vehicle & Machinery Operations	Program Duration: 40 hours
Type: Campus Training Program (CTP)	Coordinator: C. Soda

Course Description

NIPSTA's Vehicle and Machinery Operations program is designed to exceed the requirements outlined by the Illinois Office of the State Fire Marshal "OSFM", and provides students with the basic knowledge and skills needed to perform vehicle and machinery rescue at the NFPA 1006 Operations level. Students will leave prepared to operate as a member of a regional team capable of responding to statewide emergencies where basic vehicle and machinery rescue may be needed.

Prerequisites

The purpose of prerequisite course work is to ensure students have sufficient backgrounds to understand the terminology, tactics and practical applications presented in NIPSTA programs. At a minimum, NIPSTA requires successful completion of the following:

- Member of recognized fire department/brigade
- Basic Operations Firefighter

Attendance

In order to receive a certificate of completion for courses, NIPSTA requires students to be present for all lectures, demonstrations and evolutions.

Safety

NIPSTA Instructors will ensure hazards have been identified and addressed prior to the start of each program. All course safety guidelines are discussed prior to operations and at a minimum, a one (1) to six (6) instructor to student ratio will be maintained at all times. Unsafe actions or behaviors will not be tolerated and will be grounds for dismissal.

Academic Integrity

NIPSTA aspires to the highest possible standards of academic honesty and integrity in all programs as key tenants of the NIPSTA experience. NIPSTA Instructors set forth clear ethical expectations, promote consistency of standards, and encourage reporting of dishonest and unsafe behaviors. While education through participation is the central goal for every NIPSTA program, it is only possible when honesty and integrity are part of the overall mission.

Performance Testing & Evaluation

NIPSTA employs multiple methods of measuring competency subject matter including cognitive and performance skill testing. Cognitive skills will be measured by utilizing a comprehensive written exam at the conclusion of the course. Students must achieve a minimum 70% score to successfully pass the written exam. Performance skill tests measure an individual's ability to perform specific tasks or applications based on given or known JPRs. Unless otherwise specified, performance skill tests will be measured on a pass or fail basis.

ADA Compliance

Students with a documented disabilities, as that term is used in the American with Disabilities Act (ADA), may qualify for reasonable accommodations as defined in section 504 of the Rehabilitation Act of 1973.

Textbook

The following textbook is required for NIPSTA's Vehicle & Machinery Operations course.

- **Title:** "Vehicle Rescue and Extrication: Principles and Practice, revised 2nd edition"
 - ISBN: 9781284245622

Pre-course Assignments

The purpose of pre-course assignments is to ensure candidates are prepared to succeed at the onset of the program. The pre-course assignments for NIPSTA's Vehicle and Machinery Operations course are as follows:

- **Read:** Vehicle Rescue and Extrication: Principles and Practice: Chapters 1 – 11

Course Content

Course content is broken into subject area modules or "Mods". NIPSTA's Vehicle and Machinery Operations program is comprised of the following Mods:

Mod: Introduction & Orientation	Mod: Pneumatic Tools for Extrication
Mod: Safety & Risk Management	Mod: Electric Tools for Extrication
Mod: Vehicle Incident Hazards	Mod: Chain & Cable Devices
Mod: Scene Safety & Control	Mod: Buttress Systems
Mod: Traffic Control	Mod: Tool and Equipment Overview
Mod: Vehicle Incident ICS	Mod: Unstable Vehicles
Mod: Vehicle Incident Size-up	Mod: Cribbing & Chocks
Mod: Vehicle Construction	Mod: MVIs Below Grade
Mod: Supplemental Restraint	Mod: MVI Access Via Rope
Mod: Fuel Systems	Mod: Machinery Incident Hazards
Mod: De-energizing Vehicles	Mod: Machinery Incident Size-up
Mod: Basic Stabilization	Mod: Isolating Machinery Hazards
Mod: Primary Access Points	Mod: Vehicle Extrication Techniques
Mod: Victim Location & Access	Mod: Machine Extrication Techniques
Mod: Mechanism of Injury/Treatment	Mod: Basic Vehicle Lifting (air bags)
Mod: Victim Protection & Packaging	Mod: Terminating the Incident
Mod: Hand Tools for Extrication	Mod: Knowledge Assessment
Mod: Hydraulic Tools for Extrication	Mod: Skill Assessment

Learning Outcomes & Evaluation

Following the conclusion of these modules, students will be familiar with the requisite knowledge and skills needed to perform as a member of a vehicle and machinery rescue team. Written and practical evaluations will be conducted at the completion of this course.

Day 1

Morning

Mod: Introduction & Orientation
Mod: Safety & Risk Management
Mod: Vehicle Incident Hazards
Mod: Scene Safety & Control
Mod: Traffic Control
Mod: Vehicle Incident ICS
Mod: Vehicle Incident Size-up
Mod: Vehicle Construction
Mod: Supplemental Restraint
Mod: Fuel Systems
Mod: De-energizing Vehicles
Mod: Basic Stabilization

Mod: Primary Access Points
Mod: Victim Location & Access
Mod: Mechanism of Injury/Treatment
Mod: Victim Protection & Packaging
Mod: Hand Tools for Extrication
Mod: Hydraulic Tools for Extrication
Mod: Pneumatic Tools for Extrication
Mod: Electric Tools for Extrication
Mod: Chain & Cable Devices
Mod: Buttress Systems
Mod: Vehicle Extrication Techniques
Mod: Terminating the Incident

Afternoon

Mod: Tool and Equipment Overview

- Hand Tools for Extrication
- Hydraulic Tools for Extrication
- Pneumatic Tools for Extrication
- Electric Tools for Extrication
- Chain & Cable Devices
- Buttress Systems

Day 2

Morning

Mod: MVIs Below Grade
Mod: Cribbing & Chocks
Mod: MVI Access Via Rope
Mod: Vehicle Extrication Techniques
Mod: Machinery Incident Hazards
Mod: Machinery incident Size-up
Mod: Isolating Machinery Hazards
Mod: Machinery Extrication Techniques (fingers, hands, limbs)

Afternoon

Mod: Hand Tools for Extrication
Mod: Hydraulic Tools for Extrication
Mod: Pneumatic Tools for Extrication
Mod: Electric Tools for Extrication
Mod: Buttress Systems
Mod: Basic Stabilization (cribbing)
Mod: Buttress Systems
Mod: Basic Vehicle Lifting (air bags)
Mod: Hydraulic Tools for Extrication
Mod: Primary Access Points
– Glass, Doors, Roof

Day 3

Morning

Mod: Fuel Systems (electric vehicle demo)
Mod: Hand Tools for Extrication
Mod: Chain & Cable Devices
Mod: Pneumatic Tools for Extrication
Mod: Unstable Vehicles (overturned vehicle access)
Mod: Vehicle Extrication Techniques
– “Dash Lift & Roll” Techniques

Day 4

Afternoon

Mod: Victim Location & Access
Mod: Victim Protection & Packaging
Mod: Basic Stabilization (cribbing)
Mod: Buttress Systems
Mod: Basic Vehicle Lifting (air bags)
Mod: Vehicle Extrication Techniques
– 5th Door & Clam-shell Techniques

Day 5

Morning

Mod: Knowledge Assessment (Final Exam)

Afternoon

Mod: Practical Skill Assessment (Final Scenario)
• Scenario Critique & Equipment Rehab
• Course Evaluation Questionnaire (CEQ)

Reference List

Sweet, D. (2022). *Vehicle rescue and extrication: Principles and practice* (revised 2nd ed.). Jones & Bartlett Learning.

NFPA 1006, *Standard for Rescue Technician Professional Qualifications*, 2017 Edition