

	<b>Northeastern Illinois Public Safety Training Academy</b>	
<b>Course Syllabus</b>		<b>206</b>

<b>Title:</b> Vehicle & Machinery Technician	<b>Program Duration:</b> 40 hours
<b>Type:</b> Campus Training Program (CTP)	<b>Coordinator:</b> C. Soda

### **Course Description**

NIPSTA's Vehicle and Machinery Technician 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 Technician level. Students will leave prepared to operate as a member of a regional team capable of responding to statewide emergencies where advanced 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
- Rope Rescue Operations
- Vehicle & Machinery Operations

### **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 accomidations as defined in section 504 of the Rehabilitation Act of 1973.

## Textbook

The following textbook is required for NIPSTA's Vehicle and Machinery Technician 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 course are as follows:

- **Review:** Vehicle Rescue and Extrication: Principles and Practice. Chapters 1 - 11
- **Read:** Vehicle Rescue and Extrication: Principles and Practice. Chapters 12 - 13

## Course Content

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

**Mod:** Introduction & Orientation  
**Mod:** Safety & Risk Management  
**Mod:** Large Vehicle Incident Hazards  
**Mod:** Scene Safety & Control  
**Mod:** Traffic Control Review  
**Mod:** Large Vehicle Incident Command  
**Mod:** Large Vehicle Incident Size-up  
**Mod:** Vehicle & Machinery IAPs  
**Mod:** Large Vehicle Construction  
**Mod:** Vehicle Supplemental Restraint  
**Mod:** Large Vehicle Fuel Systems  
**Mod:** De-energizing Large Vehicles  
**Mod:** Large Vehicle Stabilization  
**Mod:** Access & Egress Points & Paths  
**Mod:** Large Vehicle Primary Access  
**Mod:** Victim Location & Access  
**Mod:** Lifting & Moving Equipment  
**Mod:** Estimating Weights for Lifting  
**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:** Gas Tools for Extrication  
**Mod:** Chain & Cable Devices  
**Mod:** Buttress Systems  
**Mod:** Unstable Large Vehicles  
**Mod:** Specialized Heavy Equipment  
**Mod:** Large Machinery Incident Hazards  
**Mod:** Large Machinery Incident Size-up  
**Mod:** Isolating Lg. Machinery Hazards  
**Mod:** De-energizing Large Machinery  
**Mod:** Large Vehicle Ext. Techniques  
**Mod:** Large Machine Ext. Techniques  
**Mod:** Large Vehicle Lifting  
**Mod:** Multiple Vehicle Incidents  
**Mod:** Large Machinery Lifting  
**Mod:** Elevator Incident Size-up  
**Mod:** Elevator Construction & Features  
**Mod:** De-energizing Elevators  
**Mod:** Elevator Victim Removal  
**Mod:** Medivac LZ Operations  
**Mod:** VMT Incident ICS  
**Mod:** Equipment Care & Maintenance  
**Mod:** Knowledge Assessment (exam)  
**Mod:** Skill Assessment (final scenario)

## 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.

## VMT Course Schedule

### Day 1

#### Morning & Afternoon

**Mod:** Introduction & Orientation  
**Mod:** Safety & Risk Management  
**Mod:** Large Vehicle Incident Hazards  
**Mod:** Scene Safety & Control  
**Mod:** Traffic Control Review  
**Mod:** Large Vehicle Incident Command  
**Mod:** Large Vehicle Incident Size-up  
**Mod:** Vehicle & Machinery IAPs  
**Mod:** Large Vehicle Construction  
**Mod:** Vehicle Supplemental Restraint  
**Mod:** Large Vehicle Fuel Systems  
**Mod:** De-energizing Large Vehicles  
**Mod:** Large Vehicle Stabilization  
**Mod:** Access & Egress Points & Paths  
**Mod:** Large Vehicle Primary Access  
**Mod:** Victim Location & Access  
**Mod:** Lifting & Moving Equipment  
**Mod:** Estimating Weights for Lifting  
**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:** Gas Tools for Extrication  
**Mod:** Chain & Cable Devices  
**Mod:** Buttress Systems  
**Mod:** Unstable Large Vehicles  
**Mod:** Specialized Heavy Equipment  
**Mod:** Large Machinery Incident Hazards  
**Mod:** Large Machinery Incident Size-up  
**Mod:** Isolating Lg. Machinery Hazards  
**Mod:** De-energizing Large Machinery  
**Mod:** Large Vehicle Ext. Techniques  
**Mod:** Large Machine Ext. Techniques  
**Mod:** Large Vehicle Lifting  
**Mod:** Multiple Vehicle Incidents  
**Mod:** Large Machinery Lifting  
**Mod:** Elevator Incident Size-up  
**Mod:** Elevator Construction & Features  
**Mod:** De-energizing Elevators  
**Mod:** Elevator Victim Removal  
**Mod:** Medivac LZ Operations  
**Mod:** VMT Incident ICS  
**Mod:** Equipment Care & Maintenance

### Day 2

#### Morning

**Mod:** Tool & Equipment Review  
**Mod:** Large Vehicle Stabilization (pneumatic struts)  
**Mod:** Large Vehicle Lifting (air bags & cribbing)  
**Mod:** Gas Tools for Extrication (cutting torches)

#### Afternoon

**Mod:** Large Vehicle Stabilization (farm equipment)  
**Mod:** Large Vehicle Stabilization (buttress system application)  
**Mod:** Lifting & Moving Equipment (large objects on vehicles)

## Day 3

### **Morning**

---

**Mod:** Large Vehicle Incident Size-up

**Mod:** Large Vehicle Access & Extrication (passenger busses)

- Stabilization & lifting
- Sidewall & seat removal

**Mod:** Large Vehicle Ext. Techniques (semi-trucks & trailers)

- Stabilization & lifting
- Door removal, dash displacement & tunneling

**Mod:** Access & Egress Points & Paths (passenger vehicle collapse tunneling exercise)

### **Afternoon**

---

**Mod:** Large Vehicle Incident Size-up

**Mod:** Large Vehicle Access & Extrication (passenger busses)

- Stabilization & lifting
- Sidewall & seat removal

**Mod:** Large Vehicle Extrication Techniques (semi-trucks & trailers)

- Stabilization & lifting
- Door removal, dash displacement & tunneling

**Mod:** Lifting & Moving Equipment (Grip Hoist & Hydra-Fusion Struts)

## Day 4

### **Morning**

---

**Mod:** Large Vehicle Access & Extrication (passenger busses)

- Overturned on passenger vehicle exercise

**Mod:** Large Vehicle Extrication Techniques (semi-trucks & trailers)

- Trailer overturned – through the floor exercise

**Mod:** Large Vehicle Extrication Techniques

- Through the floor & roof exercise

### **Afternoon**

---

**Mod:** Large Vehicle Access & Extrication (passenger busses)

- Passenger vehicle vs passenger bus exercise

**Mod:** Large Vehicle Extrication Techniques (semi-trucks & trailers)

- Tractor/trailer overturned on to passenger vehicle (lift and separate)

**Mod:** Large Vehicle Extrication Techniques

- Override/Underride Incidents

## Day 5

### **Morning**

---

**Mod:** Knowledge Assessment (final exam)

### **Afternoon**

---

**Mod:** 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