



LOW VOLTAGE SEMINAR

JUNE 25-26, 2024

Thank you to our Host, Instructors & Sponsors

OUR HOST



OUR INSTRUCTORS:

Tom & Leighton Bates, New Hampshire
Electrical Motors, Inc.

Chris Bowen, Production Line Controls, LLC

Jeff Copeland, Waterville Valley Resort

Scott Crowell, Mount Sunapee

Adam Cummings, Mount Sunapee

Sean Higgins, Doppelmayr

Steve Howell, Loon Mountain Resort

Ken Mack, HKD Snowmakers

Nate Ringquist, HKD Snowmakers

Shasta McMillen, Doppelmayr

Andy Pierce, AP Electrical Services, LLC

Tim Smith, Waterville Valley Resort

Doug Tofflemoyer, Bretton Woods

Master Sponsor



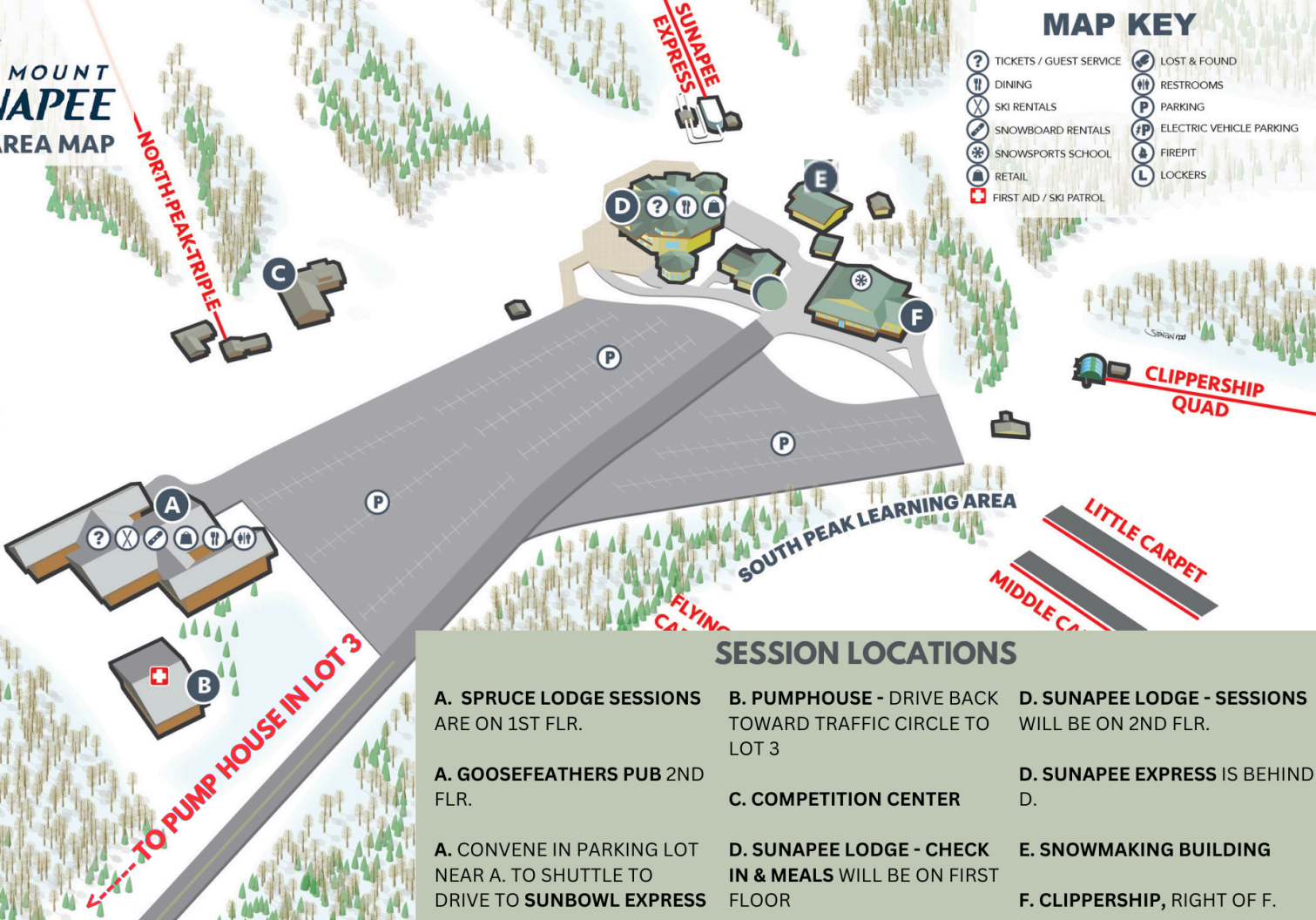
Apprentice Sponsors



In-Kind Sponsors



MOUNT SUNAPEE BASE AREA MAP



MAP KEY

- | | | | |
|---|-------------------------|---|--------------------------|
| ? | TICKETS / GUEST SERVICE | 🔍 | LOST & FOUND |
| 🍴 | DINING | 🚻 | RESTROOMS |
| 🛷 | SKI RENTALS | 🅑 | PARKING |
| 🛷 | SNOWBOARD RENTALS | 🅑 | ELECTRIC VEHICLE PARKING |
| 🏠 | SNOWSPORTS SCHOOL | 🔥 | FIREPIT |
| 🛍 | RETAIL | 🔒 | LOCKERS |
| 🚑 | FIRST AID / SKI PATROL | | |

SESSION LOCATIONS

- | | | |
|--|--|---|
| A. SPRUCE LODGE SESSIONS
ARE ON 1ST FLR. | B. PUMPHOUSE - DRIVE BACK
TOWARD TRAFFIC CIRCLE TO
LOT 3 | D. SUNAPEE LODGE - SESSIONS
WILL BE ON 2ND FLR. |
| A. GOOSEFEATHERS PUB 2ND
FLR. | C. COMPETITION CENTER | D. SUNAPEE EXPRESS IS BEHIND
D. |
| A. CONVENIENCE IN PARKING LOT
NEAR A. TO SHUTTLE TO
DRIVE TO SUNBOWL EXPRESS | D. SUNAPEE LODGE - CHECK
IN & MEALS WILL BE ON FIRST
FLOOR | E. SNOWMAKING BUILDING |
| | | F. CLIPPERSHIP , RIGHT OF F. |

LEITNER POMA



Mountaineer
Attitash Mountain Resort
Bartlett, NH



Ski NH Low Voltage Seminar Agenda

Color Code Key	
Beginner Class	
Intro/Intermediate Class	
Intermediate Class	
Intermediate/ Advanced Class	
Advanced Class	
Registered Snowmakers Only	

Tuesday, June 25

8:45-9:15 AM	Check In / Pastry & Coffee at Sunapee Lodge					
9:15-9:45 AM	Introductions & Opening Remarks at Sunapee Lodge					
		Session A	Session B	Session C	Session D	Registered Snowmakers Only
9:45-11:15 AM	1st Block	Basic Electrical Theory, Safety & Schematic Overview -- Andy Pierce at Sunapee Lodge	Fixed Grip Comm Line Concept, Troubleshooting & Wiring - Doug Tofflemeyer at Spruce Cafeteria	Detachable Tour at Sunapee Express - Scott Crowell & Adam Cummings at Sunapee Express	Detachable Lifts Schematic Print Reading - Chris Bowen, Steve Howell & Jeff Copeland in Goosefeathers Pub	The Basics of Snowmaking (AC to DC, meter use and basic schematics) - Tim Smith at the Competition Center
11:15 AM - 12:45 PM	Lunch Break & Round Table					
12:45-2:45 PM	2nd Block	Intro PLC Class - Part 1 of 2 - Chris Bowen in Goosefeathers Pub	Introduction to Ski Lift Electrical - Tim Smith, Doug Tofflemeyer & Jeff Copeland at Sunapee Lodge	Detachable Systems Intro/Anti-Collision, Spacing & RPD - Andy Pierce & Scott Crowell in the Competition Center	Drives/Motor Theory (Part 1 of 2) - Leighton & Tom Bates in Spruce Cafeteria	PLC components, controls voltages, sensor types and troubleshooting & more - Ken Mack at Booster Pumphouse
2:45-3:00 PM	Break					
3:00-5:00 PM	3rd Block	Intro PLC Class - Part 2 of 2 - Chris Bowen in Goosefeathers Pub	Battery Maintenance, Electrical Shock Safety, Meter Troubleshooting & Device Intro / Testing - Doug Tofflemeyer & Jeff Copeland at Sunapee Lodge	Detachable Tour at Sunbowl Express - Scott Crowell, Adam Cummings, Andy Pierce at Sunbowl Express	Drive & Motor Applications (Part 2 of 2) - Leighton & Tom Bates in Spruce Cafeteria	Continuation of troubleshooting & more at Booster Pumphouse then walking tour/ review of HKD equipment with Nate Renquist & Colter Lingelbach-Pierce of HKD
5:00-6:00 PM	BBQ Dinner					

Wednesday, June 26

8:00 AM	Breakfast				
		Session A	Session B	Session C	Session D
8:30-10:30 AM	4th Block	Doppelmayr Tower Electrical - Sean Higgins and Shasta McMillen in Spruce Cafeteria	Detachable Tour at Sunbowl Express - Scott Crowell	Poma Troubleshooting Class - Andy Pierce & Adam Cummings at Sunapee Express	Advanced PLC - Programming Logic & Trouble-Shooting PLC (limit 12-18 students) - Chris Bowen in Goosefeathers Pub
10:30-11:00 AM	Break				
11:00 AM - 1:00 PM	5th Block	Detachable Comm Line / Comm Line Boot Summer Maintenance and Meet & Greet - Andy Pierce, Tim Smith & Jeff Copeland in Spruce Cafeteria	Detachable Tour at Sunbowl Express - Scott Crowell	Advanced PLC - Programming Logic & Trouble-Shooting PLC (limit 12-18 students) - Chris Bowen in Goosefeathers Pub	Field Session Doing Summer Motor Drive Maintenance - Tom & Leighton Bates in Clipper Ship
1:00-1:30 PM	Lunch & Departure				



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2024 Low Voltage Seminar Course Descriptions

INTRODUCTORY

Basic Electrical Theory, Safety & Schematic Overview

(Introductory class, taught by Andy Pierce)

Covers the basics of electrical theories (AC/DC, Circuits, etc.), safety (low and high voltage, protective equipment, etc.), and schematics (from reading a circuit to following a schematic for troubleshooting).

Introduction to Ski Lift Electrical

(Introductory class, taught by Tim Smith, Doug Tofflemeyer & Jeff Copeland)

Hands-on program including turning a meter on and reviewing functions, safety around a lift cabinet, and demonstration of low voltage componentry. Bring a meter if you have one.

Intro PLC Class (Part 1 of 2)

(Introductory class, taught by Chris Bowen)

Introduction to Programmable Logic Controls, and demonstration of how it works.

Intro PLC Class (Part 2 of 2)

(Introductory class, taught by Chris Bowen)

Continuation of Introduction to Programmable Logic Controls, and demonstration of how it works.

Detachable Comm Line / Comm Line Boot Summer Maintenance and Meet & Greet

(Introductory class, taught by Andy Pierce, Doug Tofflemeyer, Tim Smith & Jeff Copeland)

This is for those who want to dig into a fixed grip, hands-on lab, and comm line setup. Will include RPD CPS detach training.

Detachable Systems Intro/Anti-Collision, Spacing, RPD

(Introductory class, taught by Andy Pierce & Scott Crowell)

Basic detachable lift systems overview, and what's the difference between what you know on a fixed grip and what is on a detachable lift.

INTRO/INTERMEDIATE

Fixed Grip Comm Line Concept, Troubleshooting & Wiring

(Intro/Intermediate class, taught by Doug Tofflemeyer, Tim Smith, & Jeff Copeland)

Learn more about fixed grip comm line and wiring, and practice some troubleshooting.

Battery Maintenance, Electrical Shock Safety, Meter Troubleshooting & Device Intro/Testing

(Intro/intermediate class, taught by Doug Tofflemeyer & Jeff Copeland)

A conceptual overview of safety in operations and maintenance related to chair lift operations. Will cover how to check batteries, arc flash, how your resort deals with who can go in high voltage cabinets, and protection for those that do – and introduce more devices, relay contactors, setting hydraulic switches with meters, etc.

Doppelmayr Tower Electrical

(Taught by Sean Higgins of Doppelmayr)

This course involves hands-on training with sensors and switches that participants can manipulate.

INTERMEDIATE

Detachable Lifts Schematic Print Reading

(Intermediate class, taught by Steve Howell, Jeff Copeland & Chris Bowen)

Basic detachable lift systems overview, what's the difference between what you know on a fixed grip and what is on a detachable lift.

Detachable Tours at Sunapee Express and Sunbowl Express

(Intermediate class, taught by Scott Crowell)

The hands-on continuation of stepping up into detachable systems. (It is recommended that you first take or be familiar with Detachable Systems Intro/Anti-Collision, Spacing, and RPD.)

INTERMEDIATE/ADVANCED

Poma Troubleshooting Class – AP

(Intermediate/Advanced class, taught by Scott Crowell & Andy Pierce)

Hands-on fault-finding class; the instructors will cause a problem for the team to find and figure out.

ADVANCED

Advanced PLC-Programming Logic & Trouble-Shooting PLC (What's behind the lights)

(Advanced class, taught by Chris Bowen)

For those who have the basics of PLC controls and would like to step up into the programming.

Drives / Motors Theory (Part 1 of 2)

(Advanced class, taught by Leighton & Tom Bates)

Drives/Motors: what they are, how they work together, and how you can work with them to further your troubleshooting abilities.

Drive & Motor Applications (Part 2 of 2)

(Advanced class, taught by Leighton & Tom Bates)

Drives/Motors: what they are, how they work together, and how you can work with them to further your troubleshooting abilities (Drives/Motors Theory is recommended as a pre-requisite.)

Field Session Doing Summer Motor Drive Maintenance (Megger Motor, Test SCR's)

(Advanced class, taught by Tom & Leighton Bates)

Hands-on demonstration of how the SCRS test and Megger motor tests are performed and what looks good or not so good.