Primary Module is established as being able to venture safely beyond Western US resort boundary on a backcountry tour and have Avalanche awareness, rescue techniques, risk factors and some basic knowledge of Avalanche Mitigation

Advanced Module is established as being a Snow Safety Professional (employed by a resort, DOT, and/or USFS)

**CERTIFIED AVALANCHE MODULE:**

**Primary Avalanche**

*This is to be used by all divisions. The three year examination window applies to this module.*

**Suggested resources:**

* *NSP Level 1 Course*
* *Snow Sense* by Jill Fredston and Doug Fesler

*• Backcountry Avalanche Safety* by Tony Daffern

*• NSP Backcountry Avalanche Safety: A Level 1 Summary* by Mike Laney

*• Explosives Use in Avalanche Control*, National Ski Areas Association Guidelines

• *Recommended Safe Working Practices, Orica Avalanche Products*, Orica Mining Services, <http://www.oricaminingservices.com/uploads/OUSA0229_Avalanche_web.pdf>

• *Snow, Weather and Avalanches; Observation Guidelines for Avalanche Programs in the United States (SWAG)* by the American Avalanche Association and USDA Forest Service National Avalanche Center

• *Staying Alive in Avalanche Terrain* by Bruce Tremper

• *The Avalanche Handbook* by David McClung and Peter Schaerer

• [www.utahavalanchecenter.com](http://www.utahavalanchecenter.com)

• [www.backcountryaccess.com](http://www.backcountryaccess.com)

**Concluding Objective:**

Upon successful completion of this module the candidate will demonstrate thorough knowledge and understanding of avalanche hazard assessment, proper use and storage of equipment, and safety procedures, and general knowledge of mitigation techniques.

**Knowledge of :**

* Definition of terms used in avalanche mitigation
* Industry needs for Avalanche mitigation
* Avalanche mitigation problem factors
* Passive methods of mitigation
* Active methods of mitigation
* Avalanche classification

**Essential Knowledge of:**

* Weather factors
* Self Rescue/Survival
* Companion Search
* Emergency Medical Care and evacuation of avalanche victims
* The use of avalanche beacon, probe, and shovel, Snowpack factors, Terrain factors Human factors/Group Dynamics, Avalanche release discussion, Hazard assessment discussion, Decision-making discussion

**Evaluation Criteria:**

The evaluation will consist of a written exam with questions taken from the NSP Avalanche Test Bank, an oral interview with questions about avalanche risk assessment & mitigation, and on mountain practical session. These will be standard questions covering the required knowledge areas. (In Divisions where avalanche terrain is not available the on mountain portion may be conducted indoors by oral interview and discussion.) A passing score is 80% on the written before moving to an oral interview and practical application. The practical application for the beacon search, described below, is Pass/Fail based on the criteria outlined.

* Demonstrate accurate measurement of:
  + - Slope angle
    - Aspect
    - Elevations

* Identify terrain features, including slide paths and terrain traps in the field
* Interpret an Avalanche Forecast, including a Danger Rose, in terms of relative hazard and determine level of acceptable risk to group
* Make a stability assessment based on a graphical format snow profile
* Discuss a snow profile based on data provided by the examiner
* Discuss terrain clues to identify avalanche paths
* Discuss terrain and snowpack clues to determine direction of prevailing winds and lee slopes
* Discuss basic aspects of:
  + Layer hardness
  + Temperature gradients
  + Grain types
  + Grain sizes
  + Stratigraphy

Avalanche Field

* Given a hypothetical last seen area (LSA) and flow pattern, identify likely burial areas on a given slope
* Find (strike) two transceivers buried in a pack or dummy within a 100 m by 100 m maximum area within five minutes (Critical performance indicator (CPI) – must be passed in order to certify). Both the five minute criteria and search area can be shortened, but not expanded, at the discretion of the Certified Avalanche Supervisor owing to terrain limitations at the time (in other words, less time to search if the search area is too small).
* Demonstrate effective spot-probing techniques for clues and catchments

**Examiners for this module will be certified members who hold or have held the following titles:**

* Certified members that have passed this module, or
* Certified members assigned by Division Avalanche Certified Supervisor
* Avalanche professionals recognized and approved by the Division Avalanche or Division Certified Avalanche Supervisor
* Certified members who have participated at the Certified Exam in an Avalanche Examiner Capacity within the past 3 years. All examiners to attend a calibration clinic once every three years.
* Certified member who have not examined in a 3 year period must participate a Certified Avalanche training/recertification module for standards calibration
* Examiner Candidates (Provisional Examiners) will shadow evaluate at either a Certified Pre-Test or Certified Exam to compare scores against qualified Examiners to calibration purposes before being deemed an Avalanche Examiner. Those failing to meet the examining criteria will not be eligible to examine until they meet said criteria. Provisional Examiner scores will NOT be used as part of the final evaluation.

**CERTIFIED AVALANCHE MODULE:**

**Advanced Avalanche**

*This portion is to be used by Western Divisions that actively participate in mitigation and the three year examination window applies to BOTH Primary and Advanced Avalanche Modules for Candidates. If a certified member wishes to transfer to a western division, they must complete the advanced Avalanche Module . These members will be allowed an adequate amount of time to gain experience and knowledge at the discretion of the Division Certified Avalanche Supervisor, but no more than two years. Once a transferring member attempts the Advanced Avalanche modules the first time they will have two years to successfully complete the module to retain Certified status (the spirit of this rule is to align with the notion of National Certified time constraints while at the same time that Certified Patrollers are self motivated value creators to the organization).*

**Suggested resources:**

* Resources listed in Primary Avalanche module
* NSP Level II Avalanche course
* NSP Avalanche Rescue Fundamentals by Lin Ballard and Dale Atkins
* NSP Backcountry Avalanche Safety: A Level 1 Summary by Mike Laney

**Concluding Objective: Upon successful completion of this module the candidate will demonstrate an in-depth knowledge of avalanche rescue techniques and mitigation .**

**Essential Knowledge:**

**•** Avalanche classification

• Group search – and area protocol

• Organized Search and Rescue (SAR) and Incident Site Command (ISC) system

• Emergency medical care and evacuation of avalanche victims

• Avalanche incident documentation

**Evaluation Criteria:**

The evaluation will consist of a written exam, an oral interview, and on mountain practical session. An evaluator will ask questions about avalanche risk assessment and mitigation from a National Evaluation Score Sheet. These will be standard questions covering the required knowledge areas. A passing score is 80% on the written and/or oral interview.

Mitigation:

* Definition of terms used in avalanche mitigation
* Industry needs for Avalanche mitigation
* Demonstrate knowledge of types of mitigation techniques
* Avalanche mitigation problem factors
* Passive methods of mitigation
* Active methods of mitigation
* How to prepare a cap/fuse assembly\*
* How to prepare a hand charge\*
* What to do in the event of a “No Light” or “Dud”\*
* Demonstrate knowledge of some explosives characteristics\*
* Describe how to handle no lights and duds\*
* Demonstrate knowledge of ATFE and any state regulations relating to explosives\*

Demonstrate knowledge of explosive safety procedures

\**Under* ***NO circumstances*** *are any explosives or explosives related equipment to be present at this exam. Topics related to explosives are for discussion only.*

Demonstrate effective probe-line management

* Group size
* Spacing (with and without a guide cord)
* Alignment
* Commands
* Use of guide cord
* Marking
* Procedures for potential “strike”
* Offset for second pass
* Describe effective use of resources (probers, shovelers, probe line group leaders, ICS)
* Location
* Dimensions

Test pit Observations/measurements

* Dig a suitable test pit (Some divisions may not be able to test in the field. In that situation the candidate must be able to describe, in detail, how the measurement of test would be conducted, why the test is conducted, and what results could indicate.) and interpret the results
* Perform/demonstrate/describe at least one of the following: Shovel Shear test, Compression test, and/or Extended Column test and interpret the results of each
* Demonstrate/describe (when/where/how they are to be used) effective shoveling methods and techniques including Strategic and Conveyor shoveling
  + Stratigraphy
  + Layer hardness
  + Temperature gradients
  + Grain types
  + Grain sizes
  + Critical structures (“lemons,” “yellow flags”)
  + Assess fracture (shear) quality
  + Draw a snow profile
* Rapid Response (Hasty) Team deployment
* Scene Management

**Examiners for this module will be certified members who hold or have held the following titles:**

* Certified members that hold Avalanche Level II, or
* Certified members that have passed this module, or
* Certified members assigned by Division Avalanche Supervisor
* Avalanche professionals recognized and approved by the Division Avalanche Supervisor
* Certified members who have participated at the Certified Exam in an Avalanche Examiner Capacity within the past 3 years. All examiners to attend a calibration clinic once every three years.
* Certified member who have not examined in a 3 year period must participate a Certified Avalanche training/recertification module for standards calibration
* Examiner Candidates (Provisional Examiners) will shadow evaluate at either a Certified Pre-Test or Certified Exam to compare scores against qualified Examiners to calibration purposes before being deemed an Avalanche Examiner. Those failing to meet the examining criteria will not be eligible to examine until they meet said criteria. Provisional Examiner scores will NOT be used as part of the final evaluation.