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## **Basic (“Level 1”) Recreational Avalanche Safety Course Lesson Plan Summaries**

The following summarizes the teaching material that has been developed for use in our Basic (Level I) Avalanche Safety course. The course contact time is approximately 24 hours. This includes some minimal review of material provided before the course, primarily covering basic definitions and terminology.

This overview is intended largely to indicate to potential students how the course is structured and what it covers, and also to serve as a guideline for Level II students preparing for their class with some review.

The format of the lesson plans is similar in structure to those of the Canadian Avalanche Association (CAA). The organization of the material, the content and the teaching materials and techniques are not at all the same. The content is based on a combination of the guidelines issued by the American Avalanche Association (AAA) and the general outline of the CAA RAC Basic class.

What is reflected here is just a summary of how the lesson plans are organized, with a statement of importance and a list of objectives for each topic. The actual lesson plans used for instruction include notes on informal “assessment” exercises to see what students know before and after each plan and notes on methods, materials, demonstrations and exercises to be used or tried. We try to make classroom work interactive and participatory as much as possible, which is why we believe that small class size is just as important inside as it is outside.

Our instructional materials are under constant revision. Changes, refinements and additional development take place before and after each course taught. Most changes are not at the broad level of objectives but involve actual instructional materials and techniques. Therefore these objectives should be representative of the course even if some changes have been made in methodology.

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## **Safety Equipment**

### **Importance**

If caught in an avalanche, survival depends on appropriate equipment being available immediately. (As well as the ability to use it effectively, as covered in another lesson.)

### **Objectives**

- List avalanche safety equipment items
- Understand the principles behind each item
- Appreciate the advantages/disadvantages of each item
- Identify appropriate personal and group equipment needs for specific trips

## **Safe Travel and Self-Rescue**

### **Importance**

When traveling in avalanche terrain there is always some chance of getting caught. The odds of surviving an avalanche are greatly improved if appropriate safety measures are taken, and if the group is prepared for a self-rescue. Safety precautions must become second nature and a matter of habit.

### **Objectives**

- List safety measures for traveling in avalanche terrain
- Describe what to do if caught in an avalanche
- Discuss (rescue) actions of survivors at the scene

## **Routefinding in Avalanche Terrain**

### **Importance**

The overwhelming majority of recreational accidents result from a poor selection of terrain and/or route for the prevailing conditions. When it is necessary or desirable avalanche hazard can be nearly eliminated by appropriate routefinding and terrain selection.

### **Objectives**

- List and describe key properties and indicators of avalanche terrain
- Identify active avalanche paths, terrain traps and inherently safe areas/routes
- Recognize starting zones and have an awareness that multiple and secondary ones are possible
- Identify terrain characteristics that interact with snow deposition



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## **Weather and Avalanches 1**

### **Importance**

Weather factors heavily influence the development of the snowpack and its structure. This includes its ability to support a load (strength) and the amount of loading (natural stress). Weather factors and the resulting snowpack can change rapidly and must be accounted for in decisions throughout an activity, both in the planning stage and while in the field.

### **Objectives**

- Understand, in general terms, the impact of weather on snowpack development and stability
- Locate and interpret general (non-specialized) weather forecast products
- List key observables in the field and why they are important
- Recognize basic local topographic effects

## **Mountain Snowpack 1**

### **Importance**

In order to assess snow stability and avalanche risk, both during planning and while in the field, it is necessary to understand the nature of the snowpack. It is important to understand the layered nature, why different layers with different properties form, and how they can differ in strength.

### **Objectives**

- Appreciate the variety of layers possible in snow and their variation in strength and bonds with each other
- Understand what general factors cause layers to form and to change
- List and describe a few of the reasons for spatial variation in the snowpack structure
- Understand the difference between new snow weaknesses and older persistent weaknesses
- Be able to characterize maritime vs. continental "snow climates"



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## **Human Factors 1 - Overview**

### **Importance**

Very few recreational avalanche incidents come down to fine points in the snowpack or subtleties in any physical parameter. The vast majority come down to a poor decision, poor leadership or lack of leadership, and/or poor dynamics within the group. An awareness of these factors and their importance may do more to improve your safety and that of your group than anything else you can do.

### **Objectives**

- Awareness of the importance and roles of groups, decisions, leadership, and communication
- Good group management practices in the field
- Recognize factors which affect individual behavior
- Awareness of the importance of group size and composition in behaviors

## **Human Factors 2 - Decision Making**

### **Importance**

Almost all recreational avalanche incidents come down to poor decision making. First of all, it is important to know what to base a decision on and what not to. Secondly, a framework or methodology for keeping focussed on the right things is extremely helpful.

### **Objectives**

- An awareness of different methods of decision making
- Knowledge of what factors are more important and which are less important when making avalanche safety related decisions
- Be aware of various decision methodologies (Red/Yellow/Green, Lemons, and 3x3)

## **Trip Planning and Preparation**

### **Importance**

Many, perhaps most, recreational avalanche involvements could have been prevented by a better selection of where to ski, sled, snowshoe or climb. More often than not (by a wide margin) the better selection could have been identified in the planning stage, before even heading for the trailhead.

### **Objectives**

- Ability to estimate slope angles from a map with a slope scale
- Ability to “read between the lines” in route descriptions
- Know how to interpret the 5-level hazard scale
- Be able to take all of the topics covered and put them together to plan effectively



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### **Field Sessions**

Much of the field time is spent learning and practicing the implementation of some of the techniques covered in the above lesson plans. Additional specific objectives are:

#### **Transceivers and Rescue**

- Familiarization with the basic operational features of most types and brands of beacons
- Successful location of a buried beacon within 5 minutes
- Familiarization with the various probe and shovel features and the use of these items
- Demonstrate the ability to help organize and participate in a small group self-rescue

#### **Terrain**

- Field recognition of potential avalanche terrain
- Selection of routes which avoid avalanche hazards or minimize exposure to them

#### **Human Factors**

- Use basic techniques for keeping group members together and functioning as a group
- Demonstration of the ability to use at least one decision-making methodology in the field

#### **Stability Assessment**

- Ability to use “on-the-fly” quick methods to look for key indicators of stability
- Ability to identify possible weak layers, slab layers and bed surfaces in a quick snowpit
- Understand the basics of how Rutschblock, compression and shovel shear tests are carried out, primarily in order to better understand references to them in advisories and discussions
- Understand in general terms why stability tests may be misleading and why they must be used within a broader context
- View stability assessment as a “big picture” which must be kept open to change even while traveling on the snow