

Winter Travel Pre-immersion Student Package



1. Trip Planning and Preparation
2. Cultural and Ecological Considerations
3. Adapt to Winter
4. Ecological Impacts of Winter Recreation
5. Creating Inquiry Questions

Lesson 1 Trip Planning and Preparation

Student Learner Outcome:

4.2 Display familiarity with basic winter trip planning tools (route cards, elevation profiles)

When planning an outdoor adventure you should answer three questions:

- A. *Where are we going?*
- B. *What should we bring?*
- C. *What do we need to know?*

A. *Where are we going?*

Jasper National Park

Go to the Parks Canada website for **Jasper National Park** to find information under **Public Safety**. <http://www.pc.gc.ca/eng/pn-np/ab/jasper/visit/securite-safety.aspx>

1. Gather the following information and fill in the chart below.
Use a mapping website to find information on how to get to Jasper.
(Use the Jasper town site as the Palisades Centre is not specifically listed.)

	Information
Directions and Map from your school to Jasper.	
The distance in km.	
The time it will take to drive there.	
Look up the road conditions report.	
Look at the weather forecast for Jasper for the next few days.	

Jasper National Park – A Dark Sky Preserve

Watch the video found at <http://www.pc.gc.ca/eng/pn-np/ab/jasper/edu/cieletoil-darksky.aspx>

1. What is the message of the video and what are your thoughts about it?

Varies – Power Down Look Up (leave technology behind and enjoy the outdoors)

2. Jasper is a "Dark Sky Preserve" and winter is a great time for experiencing this.

What is a "Dark Sky Preserve"? Encompassing over 11,000 km², Jasper National Park is the second largest dark sky preserve in the world! Dark Sky Preserves make a special commitment to protect and preserve the night sky and to reduce or eliminate light pollution in all its forms. Jasper National Park and its residents are taking extra steps, such as replacing older street lights and improving Parks Canada operations to have a minimal impact on an unimpeded night sky. We also host a number of special programs throughout the fall and winter months to highlight the importance of our Dark Sky status and to promote better awareness of how important the reduction of light pollution really is.

** The Palisades is not affected by light pollution and is a great place to see the stars. Think about using a "Star Map" application on your smart phone when you are here (free time in the evenings). Ask the staff for telescopes and binoculars as well!!!

The Palisades Stewardship Education Centre

1. Go to ***thepalisadescentre.ca*** and look through the website. What questions do you still have?

2. Navigate to our Winter Travel video:

<http://www.bing.com/videos/search?q=palisades+winter+travel+youtube&view=detail&mid=66815959A12014AFF3B166815959A12014AFF3B1&FORM=VIRE1>

List three activities in the video. Circle your favourite. *Put a star next to the one you would like to learn more about.*

3. What two things do you hope to get out of this course (besides credits!)

Marmot Basin

You will be spending the first two days of the Winter Travel course at Marmot Basin Ski Resort. Go to ***skimarmot.com*** and research the following information:

1. Highest Elevation: **914m (3000ft) vertical drop 1,698m-2,612m (8,570ft-5570ft)**
2. Size of the ski terrain: **678 Hectares (1675 acres)**
3. How big is the Lift System? **7 lifts including 3 high speed quads**
4. Total number of runs: **Runs: 86 - 30% Novice, 30% Intermediate, 20% Advanced, 20% Expert**
5. How many lodges: **3 day lodges; 1 at the base area and 2 at mid-mountain. 3 lounges, 2 cafeterias, 2 dining rooms**
6. Hours of Operation: **lifts are open from 9:00am – 4:00pm daily, Resort facilities operate from 8:00am – 5:00pm daily**
7. Latest snow report:
8. Which run would you like to try?
9. What is the “Marmot Learning Center”?
10. Have you been to Marmot before? If so, what was your best memory/experience

Wabasso Cross-Country Ski

There is a cross-country ski activity during the Winter Travel course.

Find the Winter Activities – Cross country ski trail map for Jasper National Park – Wabasso Campground.

1. How long is the outer loop? **3.6km**
2. Is the terrain difficult or easy? **This area provides a medley of options for all ski enthusiasts. Gentle terrain, with a beautiful section of trail alongside the Athabasca River.**
3. What is a highlight of the trail?

B. What do we bring?

Most of your time spent at the Palisades will be outside and active. You will need to dress to keep warm and dry and for a variety of physical activity. We will be in various locations out in the Park where there will be no chance to go inside to warm up or change clothes. If you are not comfortable you won't have fun and it will be hard to learn anything. The Palisades appreciates the work of AdventureSmart.

1. Go to <https://www.adventuresmart.ca/snow/snow.htm>.
When planning outdoor adventures in the winter, what are five things you should, "Know before you go!". **Wear your helmet:** Essential when engaging in winter activities such as skiing, skating, snowboarding and snowmobiling.
Dress in proper layers: Dress appropriately to avoid hypothermia and keep your head, ears and hands covered to avoid frostbite.
Test ice: Check ice for appropriate thickness before safely heading out skiing, skating or snowmobiling.
Respect boundaries: Going "Out of Bounds" can get you into extremely dangerous terrain.
Be avalanche aware: Always be attentive of avalanche terrain and avalanche potential in your area. Check avalanche bulletins and practice rescue skills with transceivers, probes and shovels.

Go to https://www.adventuresmart.ca/trip_safety/layering.htm

2. What is the overall reason we should layer our clothes to stay warm and comfortable in the outdoors? **So that you can regulate your temperature as your activity level rises or falls. So that you can stay warm and dry through a variety of weather conditions**
3. **The layers break into three categories: Base, Thermal trap heat, wick moisture, breathe, block wind, and repel water., and Protective Layers. These three layers work together to Trap wind, Block wind, repel water and wick moisture.**
4. The base layer should not be cotton ("cotton kills"). Why? **Cotton holds moisture, which then facilitates the rapid transfer of body heat, causing your core temperature to drop.**
5. The thermal layer should be snug. Why? **This snug-fitting layer should consist of fabrics that efficiently wick moisture away from the base layer, yet retain your precious body heat.**

6. Go "virtual shopping" at MEC. Give an example of an ideal protective layer. Explain why it is ideal.

7. Can you think of some other items you can bring to make your trip to the Palisades more safe/comfortable? (Think of being active day and night and away from places home or stores where you can usually easily grab things).

Water bottle, snacks, headlamp/flashlight, sunglasses, sunscreen...

For additional information, check out:

<http://www.wikihow.com/Dress-for-the-Cold>

<http://blog.sportssignup.com/blog/bid/120652/Keep-Warm-During-Winter-Sports-with-Three-Layers>

C. What do we need to know?

Knowing about your group is an important step in trip planning. Medical conditions, previous injuries, level of fitness and skill are essential in deciding where and what kind of a trip you will be doing. (Don't plan a 50km ski touring adventure if you or someone in your group has only ever skied 5 km!) Before you come to the Palisades Centre you should assess your skills and start getting fit.

If you have an injury or medical condition that might affect you, notify your teacher.

- We will be downhill skiing/snowboarding to get to the Marmot learning Centre. Can you ski/board a green run? (If not there still might be time for a lesson or two!)
- We will be cross country skiing for 2 hours and covering a distance of 4-5km. We will teach you all the basics but the more fit you are the more fun you will have. Can you walk/jog a distance of 4km? (Get active before the course!)
- You will be snowshoeing a distance of about 3-4km on trails and going up and down hills. Can you climb a big set of stairs 2 at a time a few times in a row? (Try it at school!)

If you are not sure, now is your chance to start training. Even a few hours of practice will go a long way to making your trip more fun and enjoyable.

1. STUDENT SAFETY

Alpine Responsibility Code: Know the Code - Be Safety Conscious!

1. Always stay in control. You must be able to stop, or avoid other people or objects.
2. People ahead of you have the right of way. It is your responsibility to avoid them.
3. Do not stop where you obstruct a trail, or are not visible from above.
4. Before starting downhill or merging onto a trail, look uphill and yield to others.
5. If you are involved in or witness a collision/accident you must remain at the scene and identify yourself to the Ski Patrol.
6. Always use proper devices to help prevent runaway equipment.
7. Observe and obey all posted signs and warnings.
8. Keep off closed trails and obey area closures.
9. You must not use lifts or terrain if your ability is impaired through the use of alcohol or drugs.
10. You must have sufficient physical dexterity, ability, and knowledge to safely load, ride, and unload lifts. If in doubt, ask the lift attendant.

Lesson 2 Cultural and Ecological Considerations



Student Learner Outcome

2.2 Identify and understand cultural and ecological considerations/issues of the environments.

1. What is meant by the word, “integrity”? How does the word “integrity” relate to our individual actions towards the environment?

Pre-immersion PPT slides 7-. Discuss and define those two concepts with the class: ecological integrity and cultural integrity. Ideas of discussion: First nation’s culture in Canada in the last hundreds of years compared to our culture in the last 50 years. Explain their lifestyles at the time (hunting, fishing...) and how minimal their impact on the environment was. Explain why we couldn’t keep that lifestyle now because of the increase of population and the importance of a balanced and sustainable ecosystem.

In a team, students research definitions of one of these words so that each word is researched by the group as a whole. Students compare their findings with their original understanding. Once students present their understanding of a word, the Teacher can pose discussion questions about each word.

2. Read how Parks Canada defines **Ecological Integrity**. In two sentences, explain what Ecological Integrity is and how Parks Canada attempts to protect it. http://www.pc.gc.ca/progs/np-pn/intro_e.asp and <http://www.pc.gc.ca/progs/np-pn/ie-ei.aspx>

keeping ecosystems healthy and whole -- a state where ecosystem biodiversity, structures and functions are unimpaired and likely to persist/ ecosystems have integrity when they have their native components intact, including: abiotic components (the physical elements, e.g. water, rocks), biodiversity (the composition and abundance of species and communities in an ecosystem, e.g. tundra, rainforest and grasslands represent landscape diversity; black bears, brook trout and black spruce represent species diversity) and ecosystem processes (the engines that makes ecosystem work; e.g. fire, flooding, predation).

3. Brainstorm, what things might stress/hurt the ecological integrity of a national park such as Jasper?

4. Check out the six stressors that Parks Canada identifies. How did your brainstorm list compare? <http://www.ec.gc.ca/indicateurs-indicators/default.asp?lang=en&n=CDE1612B-1>

5. Based on your understanding of “integrity” and “ecological integrity”, what do you think “cultural integrity” means?

6. The Government of Canada recognizes that, “*Jasper National Park represents a natural area of Canadian significance. By law, it is protected for public understanding, appreciation and enjoyment, while being maintained in an unimpaired state for future generations. National Parks have existed in Canada for well over a century. However, when Jasper National Park was created in 1907, park legislation and management, were based on European and North American ideas about conservation and tourism, and did not consider the perspectives and traditions of Aboriginal peoples. Early managers considered many traditional activities inconsistent with national park goals and, as a result, Aboriginal groups lost their physical and cultural connection to parts of their traditional territories.*”
Based on the above acknowledgement, what do you think happened to the Indigenous groups that were in the area when Jasper National Park was created? Investigate. What did you find out? Be prepared to share your findings.

7. Create a “mind map” on how you connect with ecological integrity or with cultural integrity. Look at the sample mind map in the powerpoint. Create a mind map that links ecological integrity or cultural integrity with the four areas (Family, Future, Environment, Recreation.)

Example connections:

Mountain Recreation

Students may link aspects of the economy such as tourism to preserving special places.

Students may link recreation with family though health

Your Future

Link could be one day teaching their children to ski the way their parents did for them.

With E.I intact they will still be able to view caribou with their grand children

Our Environment

Link might be healthy predator / prey relationships

Climate change could challenge species at risk

Your family

Shared experience in nature may lead to sense of ownership

Family traditions in nature could lead to career choices

MIND MAP

Lesson 3 Adapt to Winter

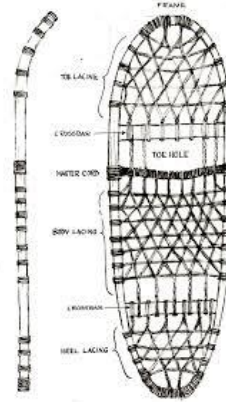
Student Learner Outcome

2.3 Identify and understand the human and wildlife adaptations for use in winter environments.

It's the changing of the seasons and winter is locked in. How do you adapt to shorter days, freezing temperatures and mountains of snow? How have North American animals evolved over the millennia to adapt to our winters?

There are three main strategies for surviving winter - migration, dormancy and toughing it out. We have chosen to tough it out!

Here's how one animal does it. Those footprints across the ski trail are the snowshoe hare. They're large and rounded with pressure in the middle on the pads and a buoyant layer of hair on the outside. Taking the biggest clue from the namehow did we, as humans, use this natural example








Snowshoe hare hind foot



Jackrabbit hind foot

1. Research and pick examples of animals and humans that have certain adaptations for winter. Fill out the chart below with your findings.

ANIMAL	Skin/hair/colour	Feet	Behaviour	Other
Snow shoe hare 	White in winter, brown in summer, Thicker hair in winter.	Large hind foot that stays on top of snow and distributes weight	Dens underground	
Human 	Layers of clothing, use of insulating materials – wool, down,	Boots, mitts, hats	Sleep longer in winter	

<p>Caribou</p> 	<p>Hollow hair that insulates</p>	<p>Wide cloven hoof</p>	<p>Group together in winter</p>	
<p>Weasel</p> 	<p>White fur, thicker hair in winter</p>	<p>Short legs and snouts to conserve heat</p>		
<p>Ptarmigan</p> 	<p>White feathers in winter</p>	<p>Large body size – easier to retain heat, feathers that cover feet.</p>	<p>Snow roost – hide out in snowbanks during bad weather</p>	

2. Make up and draw an animal that is perfectly suited for winter. You need to describe where it lives, how often does it come out, what does it look like, how does it hide and stay warm?

Lesson 4 Ecological Impacts of Winter Recreation

Student Learner Outcomes

2.5 Evaluate the ecological impacts of winter recreation

2.6 Justify opinions about winter travel and ecological integrity in a clear and logical way considering the impact on others

Canadian National Parks were invented to preserve wildlife, natural resources and also provide recreational opportunities. Unfortunately, some parts of national parks became so popular that human use degraded the very thing people came to experience. As the decades passed and human impact on the environment increased, parks were seen as a place where whole ecosystems needed to be protected.

An intact ecosystem is a geographical area that includes all the living and non living elements plus all natural processes and interactions.

Our activities can damage ecosystems beyond repair. Now, for any activity to take place, it must first pass through a filter of **ecological integrity**. This means the activity must not harm the long term viability of the ecosystem in which it takes place. This provides a measurable way to help determine what activities can or cannot happen in a national park.

1. Do you think the Wordle in the powerpoint reflects the important elements of ecological integrity? Evaluate the wordle. For example, are there words that should be bigger or smaller?

Teacher notes:

Using the above description and from previous questions, students are meant to identify the important elements of an intact ecosystem. In the wordle they are noted as: abiotic, biodiversity, intact processes and interactions. These should be among the larger words.

The human element is important in that people can influence the ecosystem in helpful or harmful ways. In many cases ecosystems do not require humans in order to function but if they are damaged they may benefit from human actions. Also important is recognising that humans are part of the ecosystems they live in.

Students can answer one of the questions following. Other questions can be used as extension activities.

2. Pick **only one of the following assignment options to complete.**

Option A. Activities in National Parks

Use the following web sites to help answer the next questions.

<http://www.pc.gc.ca/eng/pn-np/ab/jasper/activ.aspx>

<http://www.jasper.travel/things-to-do/activities/winter>

<http://www.pc.gc.ca/eng/pn-np/ab/jasper/activ/hiver-winter.aspx>

1. Name 3 winter activities that are encouraged in Jasper National Park? Enjoy canyon ice walks, pond skating, cross-country skiing, snowboarding, skiing, snowshoeing, fat biking, wildlife watching and dog sledding (allowed on Pyramid Lake).

2. Name 3 activities that are not permitted. Use the **Regulations Brochure** at <http://www.pc.gc.ca/eng/pn-np/mtn/reglements-regulations/reglements-regulations.aspx>

Teacher notes:

- Don't go in closed areas.
- You may need a permit! Check!
- Camp in designated campgrounds only.
- You can only have alcohol at registered campsites, private residences or licensed premises.
- Fires are only permitted in designated areas.
- No off road vehicles including snowmobiles.
- Quiet hours
- Pets on leash. REstricted in some areas (especially caribou closures)
- Don't collect natural items.
- View wildlife safely
- No firearms or hunting
- No drones

3. Why do you think these activities not permitted? Remember, you may not know the actual answer, just think about what it is about an activity that makes it permitted or not permitted. We will cover some of the park management decisions when you get to the Palisades.

Teacher notes:

Students give an opinion on why something is permitted or not. It does not have to be correct, just thought out. Types of answers include: animal harassment, noise or air pollution, conflicts too much with other activities, damages or interferes with important winter habitat

4. If there were no rules and you could do what you wanted, what winter activities would you like to do in Jasper National Park?

Option B: Environmental impacts

For the next question, refer to pages 140-146 of the following document which outlines the environmental impacts of skiing (alpine and Nordic).

http://www.olympic.org/Documents/Reports/EN/en_report_1118.pdf

1. Since winter activities by definition take place on frozen ice or snow, do you think the overall impact on vegetation is more or less than summer activities? Why?

Teacher notes: As long as the snow is deep enough, there is relatively low impact on the vegetation.

2. Name 5 environmental impacts that are considered in the development of either cross country or downhill trails.

Teacher notes:Answers are from the middle of page 143.

- New ski runs in forests increase the amount of direct sun to the forest edges, which can cause localised damage to the bark;
- Off-piste skiing in woods can hinder their regeneration, because the ski edges cut the small trees buried in the snow;
- Off-piste skiing in woods can be a cause of major stress for the fauna which, hindered by the snow cover, cannot run away from skiers;
- When there is little snow cover and in extreme situations (ridges or steep slopes), the edges of skis, and particularly snowboards, cause mechanical damage to the subsoil;
- Snow-generating machines change the structure of the snow: packing it can lead to the formation of ice, a deterioration of its thermal insulation, freezing of the ground and a lack of oxygen, which encourages the growth of mould;
- For the wild mountain fauna, the end of the winter season is the time of reproduction and feeding to compensate for the winter period. Off-piste skiing can seriously hinder these activities which are essential for the survival of the animals.

-
3. Do you think these effects are enough to ban cross country or downhill skiing in Jasper National Park? Why or why not.

Teacher notes:These impacts are in general limited to the ski slope or trail and are not on a scale large enough to damage the whole ecosystem. Eg there is a large amount of alpine tundra in Jasper National Park. Although it may be partly compromised at a ski area, overall the impact is small. We will discuss larger scale impacts such as critical winter habitat for goat or caribou on the course. Note: In October of 2016 Parks asked Skiers/Boarders to refrain from going to the Bald Hills in early season (because of effects to vegetation and potential injury from hazards just beneath snow).

4. Use the following sites and articles for the next question.

<http://www.pc.gc.ca/pn-np/nl/grosmorne/activ/motoneige-snowmobiling1/m-s2.aspx>

http://articles.washingtonpost.com/2013-02-22/national/37234645_1_snow-coaches-yellowstone-vacations-snowmobile-groups

Snowmobiling is an accepted activity in some protected areas. If you can do it in Yellowstone or Gros Morne National Park, why not in Jasper National Park's Maligne Valley? **Responses vary.**

Lesson 5 Questions for Inquiry with Parks Canada Experts

Student Learner Outcome

2.4 Demonstrate understanding of the specific concepts associated with winter travel and avalanche awareness

Use the space below to make up a question that interested you about each of the previous 4 topics. Make up a final question about your upcoming time at the Palisades.

	Your question
Lesson 1	
Lesson 2	
Lesson 3	
Lesson 4	
Palisades	