



CMC Avalanche Science Program Standards

Welcome to the Leadville Campus of Colorado Mountain College and congratulations on your decision to pursue a Certificate in Occupational Proficiency as a 'Snow, Weather, and Avalanche Field Technician'. The Avalanche Science Program (ASP or Program) is a part of the Ski Area Operations Program, also at the Leadville campus.

The following document provides Program expectations for student enrollees. Students should review the components of this document carefully because of the impact these standards may have on their academic success and personal safety. This document is meant to promote the best and safest educational experience for our students. It is also intended to articulate the philosophy of professional behavior, technical competence, and safe practice expected of our graduates.

Essential Eligibility Requirements

Age

Students must be 18 years of age to participate in the ASP coursework unless specifically authorized by the Program Faculty Lead.

Physical ability

We want to ensure you are able to safely take advantage of what the Avalanche Science Program has to offer. The following physical requirements are essential for success in the ASP (Note: additional minimum health, fitness, and ability requirements are detailed later in this document under the section titled Safety, Equipment, Fitness, and Travel Ability). Students must possess the physical ability to:

- Lift a minimum of 30% of your body weight.
- Stand for long periods of time (1 or more hours).
- Reach objects overhead and to either side.
- Crouch or stoop for a period of time not to exceed 15 minutes.
- Remain seated for at least 60 minutes.
- Walk/hike/ski/split-board/snowshoe on flat, uneven terrain carrying a backpack weighing up to 30% of your body weight.
- Walk/hike/ski/split-board /snowshoe up and down slopes of varying angles carrying a backpack weighing up to 30% of your body weight.
- Withstand temperature extremes between 110 to -40 degrees F with proper equipment.
- Perform all of the above physical tasks at elevations up to 14,500 feet.
- Perform all of the above physical tasks throughout repeated long, challenging, and adverse weather days in the field.
- Possess manual dexterity sufficient to manipulate objects in a variety of sizes and shapes with gloved hands and temperatures below freezing.
- Possess speech, vision, and hearing sufficient for personal communication in a variety of indoor and outdoor environments.
- Possess speech, vision, hearing and manual dexterity sufficient for using electronic devices such as a smartphone, desktop computer, tablet computer, avalanche beacon, GPS device, rescue beacon, or radio in a variety of indoor and outdoor environments.

Previous academic work and required certifications

To be admitted into the Avalanche Science Program, students must demonstrate completion of the following coursework, or equivalent, as established by: College transcripts (unofficial), College placement exam, equivalent coursework, work experience, or other experience/learning as approved by the Program application review committee:

- ENG 121 (English Composition I)
- COM 115 or COM 125 (Public Speaking/Interpersonal Communication)
- MAT 121 (College Algebra I)
- CIS 118 (Intro to PC Applications)
- Level 1 Recreational Avalanche Safety course — must be within the past 5 years, at least 24 hours in duration, covering the American Avalanche Association Level I Recreational Avalanche Safety curriculum guidelines.
- Avalanche Rescue course — must be at least 8 hours in duration, covering the American Avalanche Association Avalanche Rescue curriculum guidelines.
- Wilderness First Responder certification course — must be at least 64 hours in duration and cover the Wilderness Medical Society recommended WFR curriculum. Applicants may possess a higher level of medical credential (e.g. EMT certification) but the application review committee will only consider this equivalent in the context of training or experience in the application of emergency medical care in a wilderness context.
- Current adult CPR/AED certification — must be training that required hands-on skills practice with an instructor.

Students are encouraged to discuss prerequisite academic work and required certifications with the Program Faculty Lead if they have questions; these minimum entry requirements are intended to promote the best possible educational experience for our students and the Program acknowledges that there may be alternative pathways to meeting these expectations.

Some of these entry requirements may be waived for students enrolling in individual courses for the purposes of continuing professional development and who are not seeking the full Certificate of Occupational Proficiency in Snow, Weather, and Avalanche Field Technician. Additionally, students may be allowed to enter the Program while concurrently enrolled in prerequisite courses as dictated by necessary skills/knowledge required for course progression (e.g. a student may be permitted to start Program coursework but must complete required prerequisite prior to the first fieldwork session).

If a student doesn't meet these pre-requisites he/she will be required to take the appropriate preparatory courses. The need to take such preparatory courses may delay enrollment in the ASP courses.

General Program Standards

Online/Hybrid Coursework

- I. Students will be required to complete a significant amount of coursework online, either 'synchronously' or 'asynchronously'. Some online coursework will be delivered live, in a 'synchronous' format where students will be required to attend class sessions on set days and times, remotely via a computer application such as WebEx. Other online work, such as reading assignments, topic-focused assignments, quiz/exam taking, and discussion group participation will be completed 'asynchronously' (independently), outside of live class time.
- II. This Program requires students to have basic computing skills, consistent access to a computer with a modern operating system (on-campus computer labs are available at no cost for all students), a reliable high-speed internet connection, the ability to navigate folders/files and perform file management, use email, print documents, and send attachments.
- III. This Program requires the use of a variety of applications for coursework, for example: YouTube, WebEx, Screencast-O-Matic, Snow Pilot, MS PowerPoint, MS Excel, MS Word, Google Docs, Google Sheets, and Google Sites. Instructors will provide detailed information to students about the required applications for each specific course and will generally provide a "freeware" version of the application whenever possible.

- IV. Students should be comfortable with the following computer skills:
- Be familiar with the operating system used on your computer or the computer you will be using.
 - Be comfortable with word processing software.
 - Understand terms such as mouse, drag, drop, open, select, file, choose, double-click, download, upload, send, etc.
 - Installation of new software
 - Web navigation
 - Pull down menus and directories in Windows or folders on a Macintosh
 - Save/Save As (files)
 - File naming conventions (number of characters, extensions, text only, etc.)
 - Finding files on the hard drive or on external memory devices
 - Minimize and maximize Windows
 - Copy and paste text or graphics across applications (using the clipboard)

Canvas Online Learning Management System

The Avalanche Science Program will use the Colorado Mountain College ‘Canvas’ online learning management system for a significant portion of classwork. It is required that students frequently monitor class information and be responsible for any assigned material and announcements on Canvas.

Program Attendance

Program students are required to attend all “on-campus” sessions, no absences allowed. Verifiable emergency situations may be considered as exception on a case by case basis by the Program Faculty Lead and Program staff although the intensive and focused nature of these sessions may not allow for accommodation.

Each individual course and instructor will establish attendance/participation standards in their respective course syllabus. In general, attendance for all class sessions (either face-to-face or synchronous on-line) is a baseline expectation for Program students. Excessive tardiness or missed class time may constitute grounds for grading penalties, administrative withdrawal from the course, or possibly expulsion from the Program.

Attitude and Professional Behavior

Students are expected to maintain a professional and appropriate demeanor in all field and classroom sessions as well as during internships. Disruptive or inappropriate behavior will simply not be tolerated and students deemed to be disruptive will be removed from that course or internship site, and risk removal from the Program.

Students are preparing for a career where the expectation for dress, appearance, and personal hygiene reflect a professional demeanor — shower regularly, wear clean clothing, and maintain a professional appearance. Our goal is to educate and prepare our students with a professional demeanor that will significantly increase their chances of finding work in the industry.

Student performance, behavior, and their demonstration of professionalism will be evaluated during internship activities. Students may be removed from the program for failure to maintain Program expectations during their internship. The faculty coordinating student internship experiences will establish specific parameters for this in the course syllabus.

Academic Policies & Requirements

Program students are expected to read and abide by the standards of conduct as described in the Colorado Mountain College Student Handbook.

Students must achieve a passing grade in each of the required Avalanche Science Program courses and a 3.0 GPA to receive the Certificate of Occupational Proficiency in Snow, Weather, and Avalanche Field Technician from Colorado Mountain College.

Students must maintain a 3.0 GPA in Program coursework to be eligible for A3 Pro 1 certification.

A failing grade in any Avalanche Science Program course may result in the student's removal from the Program. The Program committee and course instructor will determine the appropriate outcome.

Sexual Harassment and other forms of unacceptable behavior

Harassment of any kind is unprofessional and unacceptable. All CMC students have a right to work and learn in an environment free from unsolicited and unwelcome sexual overtures. Sexual harassment is when an unwelcome sexual advance, a request for sexual favors, and other verbal or physical conduct of a sexual nature occurs. Please refer to the [Student Handbook](#) for the college's detailed policy.

Additionally, inappropriate behavior such as physical intimidation/harassment, insulting racial comments, jokes in poor taste which may insult a person, or using language that is offensive, will not be tolerated in any course. Please refer to the [Student Handbook](#) for the college's detailed policies.

Substance Use

Any drug or alcohol use (including marijuana) will not be tolerated during any academic or field course offered by the Avalanche Science Program. Violation of the substance abuse policy may be grounds for dismissal from the Program and subsequent disciplinary action from the College. Please refer to the [Student Handbook](#) for the college's detailed policies.

Tobacco Use

Tobacco products (cigarettes, smokeless tobacco, etc.) may not be used at any time during any Avalanche Science Program course. Nicorette® gum or the Nicoderm® patch are acceptable substitutes.

Criminal Background Checks and Drug Screening

Students are advised that, although the Program does not conduct criminal background checks or drug screening, the internship sites where students may be assigned may require these be performed. If required, students will be responsible for any associated expenses. Students may also be subject to any additional workplace standards required by our internship locations.

CMC Student Handbook

Students must be familiar with the College's Student Handbook. Student responsibilities, honesty, and the "code of conduct" listed in the handbook also apply to all academic and field courses in the Avalanche Science Program.

http://coloradomtn.edu/student_services/student_handbook_policies/

Safety, Equipment, Fitness, and Travel Ability

Equipment

The following lists provide a general outline of the required or recommended equipment for participation in Program fieldwork. It is an expectation that all student equipment be of reasonable quality, of modern design, and demonstrable utility. All student equipment is subject to the approval of Program instructors and students may be required to acquire more suitable equipment prior to participation in fieldwork. With that said, some equipment may be rented for the specific activity and students should discuss options with faculty prior to making any purchases. Additionally, some course specific equipment is provided by the college. The course SAO 162, Introduction to SWAT, will establish equipment requirements and will provide students with specific direction on what is appropriate.

- I. **Clothing** — Students must have sufficient personal clothing of reasonable quality and of appropriate design to participate in extended winter outdoor activities. Personal preparedness is a primary assumption for snow/avalanche workers and the ability to maintain comfortable core temperature to participate in field activities is

fundamental. This inventory includes:

- a. Outerwear shell and pants suitable for backcountry touring
 - b. Insulation (down or synthetic) and mid-layers
 - c. Base-layer
 - d. Hat, gloves, mittens, balaclava
 - e. Socks
 - f. Boots suitable for moving over snow during non-touring activities (e.g. snowmobiling or trips to the snow study site on campus)
- II. **Program Uniform** — Students enrolled in the full certificate track will be required to purchase the basic student uniform (outer shell and insulation layer). Students will be required to wear this uniform during designated field sessions or other activities and during field internships. Students are expected to represent the program in a professional manner while wearing uniform components outside of designated classwork or internship activities and failure to do so may result in progressive disciplinary actions that may include removal from the Program.
- III. **Personal Gear** (*this equipment will be reviewed in SAO 162, Introduction to SWAT*) — Students must have:
- a. Ski touring backpack of at least 30 Liters capacity, preferably with an avalanche rescue tool compartment
 - b. Goggles, sunglasses
 - c. Small 1st aid kit (*specified in the “first aid minimum equipment” document*), and sunscreen
 - d. Bivvy sack or rescue tarp
 - e. Repair kit suitable to maintain the student’s backcountry travel equipment
 - f. Miscellaneous items such as: water bottles, thermos, multi-tool or knife
- IV. **Personal Backcountry Movement Equipment** (skis, snowboard, snowshoes, snowmobiles etc.) — The Program acknowledges that there are a variety of “acceptable” backcountry movement modalities for travel over the snow. Key considerations for the Program are that fieldwork can be carried out efficiently and safely. While some fieldwork in simple terrain will not require specific equipment (e.g. snowshoes would be appropriate), fieldwork in and around avalanche terrain or that requires specific travel modalities will. With this in mind, instructors will specify on what courses and for what fieldwork students will be required to have one of the following equipment types (remember, as stated above, some equipment may be rented for specific fieldwork):
- a. Telemark skis/bindings of at least 80mm waist (preferably with a releasable binding system) and plastic backcountry touring boots and fitted climbing skins, or...
 - b. Alpine Touring skis/bindings of at least 80mm waist and backcountry touring ski boots and fitted climbing skins, or...
 - c. Split-board and suitable backcountry touring boots and fitted climbing skins.
 - d. Note that students must be experienced and proficient with the use of their chosen backcountry travel equipment.
 - e. Note: Students may also be required to use specified backcountry travel equipment as required by internship sites. (e.g. an alpine skiing setup with releasable bindings).
- V. **Personal Protective equipment** — the following safety equipment is strongly recommended for fieldwork in and around avalanche terrain but is not required.
- a. Airbag pack
 - b. Helmet
 - c. Note: Students may also be required to use the above equipment as required by internship sites. The Program will have a number of airbag packs available for students to use if required during their internship.

- VI. **Avalanche rescue equipment** — The following equipment is required:
- Avalanche Beacon of modern design (less than 5 years old) with 3-antennas
 - Avalanche rescue shovel made of hardened aluminum with an extendable shaft
 - Avalanche probe pole of at least 270cm length
- VII. **Snow study equipment** — the following equipment is required unless otherwise indicated. (Note: it is recommended that students delay purchase of these items until they have attended the initial sessions of SAO 162, Introduction to SWAT and SAO 164, Snow, Weather, and Avalanche Observations).
- 2 meter ruler metric (rigid)
 - 10x or 15x loop (hand lens)
 - Stem thermometer, Celsius, digital or analog
 - Large Column Cutting Cord
 - Clinometer
 - Snow Crystal Card (with mm grid)
 - Snow Saw, 35cm minimum
 - Altimeter
 - Compass
 - GPS navigation device
 - Field Notebook
 - Pencils (mechanical or wood)
 - Shovel, extendable, flat blade, hardened Alu.
 - Probe pole 270cm min. length with scale markings
 - Pouch, stuff sac, or study kit to hold equipment

Ability

Over-the-Snow-Travel Ability — Minimum expectations: Key considerations for accomplishing Program learning objectives are that fieldwork can be carried out efficiently and safely. In order to accomplish safe and efficient fieldwork, the following requirements beyond the previously listed “physical abilities” are expected of participants during designated fieldwork:

- Students must be able to operate a snowmobile in variable snow conditions in simple backcountry terrain in a safe manner (Note: the course SAO 162, Introduction to SWAT, includes basic instruction in snowmobile operation intended to meet this expectation).
- Students must be able to ski (alpine or telemark) or snowboard at an “Intermediate” level in variable terrain and snow conditions, including slopes up to 40 degrees.

Health and Fitness

- Health and Fitness — Minimum expectations: Key considerations for accomplishing learning objectives are that fieldwork can be carried out efficiently and safely. In order to accomplish safe and efficient fieldwork, the following health and fitness considerations beyond the previously listed “physical abilities” are expected of participants during designated fieldwork:
 - Students must submit a CMC Physician Reported Medical History Form prior to engaging in fieldwork. Note: Students with health conditions deemed incompatible with Program activities may not be permitted to participate in fieldwork. Per the CMC Risk Management Plan, the fieldwork activities of the Program meet Level IV risk/exposure.
 - Students must be of appropriate physical fitness to engage in strenuous physical activity for prolonged periods (>1 hour), in cold weather, in harsh conditions, and altitudes of >10,000’.

General Safety Considerations

- I. Fieldwork: Students will be held to a high expectation for safety awareness (e.g. risk evaluation) and practices (e.g. risk treatment) as a foundational philosophy of this program. Students will be assessed regularly on their safety awareness and practices, and failure to demonstrate appropriate application of safety concepts and practices taught may result in removal from the Program.
- II. Independent Student Fieldwork: Students will be expected to complete some course assignments independently (without Program faculty) in backcountry winter terrain. When doing so, students must abide by Program established *Fieldwork Safety Procedures* for independent fieldwork. Program *Fieldwork Safety Procedures* include:
 - a. Filing, and approval of a completed independent fieldwork trip plan with at least one ASP faculty member.
 - b. Completing check-in and check-out procedures with a Program faculty or designee.
 - c. Identifying a reliable local contact for trip planning and check-out, check-in.
 - d. Providing local contact with emergency procedures and contact information for rescue resources.
 - e. Carrying minimum avalanche rescue equipment.
 - f. Carrying Program defined personal protective equipment, 1st aid, and repair equipment.
 - g. Carrying appropriate communication devices (e.g. radio, cell phone, satellite phone, In-Reach device®).
 - h. Carrying appropriate navigation tools
 - i. All independent student fieldwork must be done with a partner (preferably another Program student.)
 - j. Carrying a Program issued In-Reach device®.

Student affirmation of Avalanche Science Program Standards

I have read, understand, and agree to abide by the Program guidelines presented in this document

Student Name:

Student Signature:

Date: