**Guide pour un syllabus EASA Mountain Rating (A)**

**(according to COMMISSION REGULATION (EU) No 1178/2011 and the Acceptable Means of Compliance and guidance Material to Part-FCL)**

[](http://www.google.ch/imgres?imgurl=http://wordpress.gletscherflug.ch/wp-content/uploads/2012/01/DSC000232.jpg&imgrefurl=http://wordpress.gletscherflug.ch/2012/01&h=1536&w=2048&tbnid=LGj4IMz89mTv0M:&zoom=1&docid=zNnofZwxnQ0kmM&hl=de&ei=TV2RVNmyO8WzUdjggKAF&tbm=isch&ved=0CFMQMygnMCc&iact=rc&uact=3&dur=495&page=1&start=0&ndsp=41)

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* + 1. INTRODUCTION

**SYLLABUS:** L’objectif de ce syllabus est de mettre à disposition, de l’instructeur comme de l’élève, une méthode sur la préparation et la conduite de l’entraînement en vue de l’obtention de la qualification montagne EASA selon section ski, ou section roues. Il est à noter que ce syllabus est spécifiquement adapté à l’apprentissage initial sur skis (MOU skis) conclu par un examen approprié (Skill test) et éventuellement suivi par une familiarisation sur roues en vue d’obtenir l’extension roues (MOU wheels). (Un examen n’est dans ce cas pas requis) La structure de ce syllabus reflète les exigences EASA et son contenu est basé sur le document : ***Commission Regulation (EU) No 1178/2011* document.** Il est divisé en quatre étapes distinctes:

- **NIVEAU 1:** théorie et introduction

- **NIVEAU 2:** entraînement de base sur skis

- **NIVEAU 3:** consolidation de la phase sur skis

- **EXAMINATION:** vol d’examen sur skis (Skill test MOU skis)

- **NIVEAU 4:** entraînement sur roues et qualification (MOU skis & wheels)

Les objectifs de ce syllabus sont les suivants:

- **Harmoniser l’entraînement au sein de l’école (ATO) permettant des changements d’instructeurs sans impact négatif sur l’élève pilote.**

- **Assurer que toutes les matières soient abordées et entraînées pendant la période d’entraînement.**

- **Assurer un accès documenté à la situation de progression de l’élève a tout moment pendant la formation.**

- **Assurer une progression constante et continue des connaissances et du niveau de maîtrise de l’élève.**

- **Assurer l’adaptation aux besoins de l’élève, en prenant en considération les conditions météorologiques journalières, du statut technique de l’avion et de du temps à disposition.**

- **Obtenir la qualification montagne selon EASA dans un espace-temps raisonnable avec un standard élevé.**

**SECTION THEORIQUE:**

En plus de la section pratique, assisté par un instructeur montagne, l’élève pilote devra préparer de manière autonome les sessions pratiques, basées sur l’étude du livre “***Flying and landing in a mountainous environment***” accompagné de son CD-ROM. Les connaissances théoriques seront complétées par des explications et des exemples donnés par un instructeur montagne. Les sujets à apprendre seront évalués et discutés pendant le briefing et selon les objectifs de la session. Les zones d’atterrissages seront analysées au préalable sur la base des cartes fournies dans le livre de théorie, sur des images satellites, le contenu official de l’AIP Switzerland AGA 3-2-1/2, 3-3-1/2/3, 3-3 APP1, VFR et de cartes topographiques. Les cartes pour la section ROUES seront fournies et présentées par l’école (ATO) ou l’instructeur MI personnellement.

**SECTION PRATIQUE:**

La description de la leçon de vol spécifie le niveau de progression, le numéro de vol, la thématique, ce qui a été démontré par l’instructeur, les exercices à accomplir, la préparation, les objectifs du jour ainsi que le programme de vol. Le verso de cette page, s’explique d’elle-même et doit être complétée par l’élève comme par l’instructeur après la séance de vol. Il est important que les objectifs soient définis dans un ordre réalisable et mesurable.

Ceux-ci sont considérés comme atteint lorsque l’élève comme l’instructeur sont en accord avec les résultats. Il est de la responsabilité de l’instructeur de vérifier, à l’aide de questions, l’évaluation des performances journalières de l’élève, si ceux-ci atteignent l’objectif défini. Une répétition des objectifs peut-être définie pour la séance de vol suivante. Il n’y a pas de fenêtre horaire définie au vu de la diversité des types d’exercices, des différents endroits d’entraînement et de la performance diverse de chaque individu.

Les pilotes disposant d’expérience préalable en montagne doivent effectuer un vol d’évaluation avec un MI afin de définir leur niveau et capacités. (Voir page 7). Après ce vol, le MI détermine à quel stade d’apprentissage le pilote se situe. Ce vol d’évaluation nécessite au moins 20 atterrissages sur 3 surfaces différentes, et dans des conditions environnementales acceptables. L’inscription des leçons de vol superflues seront amendées par N/A (not applicable).

Les exigences minimales légales doivent être remplies en tout temps. Prendre note que l’enseignement théorique et pratique (selon FCL.815 b) doit être terminé dans une période n’excédant pas 24 mois. L’enseignement théorique fait partie de la leçon 1.1 et les sections s’y référant sont décrites sur la liste des exercices obligatoires en pages 35 à 37.

**INSCRIPTIONS:**

Un formulaire **d’inscription des atterrissages (section ski),** permet d’inscrire les sessions différentes d’entraînement selon l’endroit la date, vol solo ou double commande, et doivent être contresignée par l’instructeur responsable. Ce procédé garantit la documentation de l’entraînement de l’élève, en particulier lorsqu’il y a interruption prolongée ou changement d’instructeur. Un autre formulaire permet de lister l’ensemble l’entraînement face aux exigences légales, si applicables, nécessaires le jour de l’examen pratique.

Un formulaire **d’inscription des atterrissages (section roues),** est également publié. Un examen n’est pas nécessaire, cependant, dans l’intérêt de transparence et afin de faciliter l’inspection des dossiers de progression des élèves par les autorités de surveillance, ces formulaires doivent être remplis de manière précise et correcte. Une signature dans le carnet de vol est également nécessaire.

**VERSION ET DATE EFFECTIVE:VERSION AND EFFECTIVE DATE:**

La **version (V)** et **révision (R)** du présent document doit être inscrite au coin supérieur droit de chaque page du document et doit toujours être à jour. En plus la date de mise en vigueur doit également être prise en considération. Les différents responsables de l’ATO doivent fournir la dernière version en tout temps.

* + 1. INDEX

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* + 1. GLOSSARY

ACFT Aircraft

ATO Authorized Training Organization

AFM Aircraft Flight Manual

DA Density Altitude

EASA European Aviation Safety Agency

FOCA Federal Office of Civil Aviation

GVA Geneva

HT Head of Training

ID Identity Document

LDG Landing

M&B Mass and Balance

MI Mountain Instructor

MOU Mountain

PIC Pilot in Command

R Revision

S Skis

SW Skis and wheels

T/O Take-off

V Version

W Wheels

ZRH Zurich

* + 1. MINIMUM REQUIREMENTS ACCORDING TO EASA FCL.815 MOUNTAIN RATING (REQUIS SELON EASA FCL.815 QUALIFICATION MONTAGNE)

Les exigences minimales prescrites par EU 1178/2011 pour l’entraînement d’un pilote aspirant à la qualification MOU sont clairement définies dans l’article FCL.815 MOUNTAIN RATING. Ces exigences doivent être évaluées avant le début de l’entraînement et vérifiées avant l’examen pratique par l’instructeur (MI) responsable. Toute divergence devra être rapportée au chef instructeur ou chef de l’instruction et accompagnée de mesures de corrections. Le texte original en Anglais de cet article stipule les choses suivantes:

***FCL.815 Mountain Rating***

1. *Privileges. The privileges of the holder of a mountain rating are to conduct flights with aircraft or TMG to and from surfaces designated as requiring such a rating by the appropriate authorities designated by the Member States.*

*The initial mountain rating may be obtained either on:*

1. *wheels, to grant the privilege to fly to and from such surfaces when they are not covered by snow; or*
2. *skis, to grant the privilege to fly to and from such surfaces when they are covered by snow.*
3. *The privileges of the initial rating may be extended to either wheel or ski privileges when the pilot has undertaken an appropriate additional familiarization course, including theoretical knowledge instruction and flight training, with a mountain flight instructor.*
4. *Training course. Applicants for a mountain rating shall have completed, within a period of 24 months, a course of theoretical knowledge instruction and flight training at an ATO. The content of the course shall be appropriate to the privileges sought.*
5. *Skill test. After the completion of the training, the applicant shall pass a skill test with an FE qualified for this purpose. The skill test shall contain:*
6. *a verbal examination of theoretical knowledge;*
7. *6 landings on at least 2 different surfaces designated as requiring a mountain rating other than the surface of departure.*
8. *Validity. A mountain rating shall be valid for a period of 24 months.*
9. *Revalidation. For revalidation of a mountain rating, the applicant shall:*
10. *have completed at least 6 mountain landings in the past 24 months; or*
11. *pass a proficiency check. The proficiency check shall comply with the requirements in (c).*
12. *Renewal. If the rating has lapsed, the applicant shall comply with the requirement in (e)(2).* 
    * 1. ASSESSMENT FLIGHT FOR PILOTS WITH PREVIOUS MOU EXPERIENCE (VOL D’EVALUATION POUR PILOTES AVEC EXPERIENCE PREALABLE)

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| --- | --- |
| **Step 0** | * ASSESSMENT FLIGHT |
| **Flight 0.1** | * ASSESSMENT FLIGHT |
| **Theme:** | * Déterminer les capacités actuelles, le degré d’entraînement et la connaissance d’un pilote disposant d’expérience préalable d’atterrissages en montagne, et désirant commencer l’entraînement MOU |
| **Demonstration:** | * Aucune |
| **Exercises:** | * 20 atterrissages sur trois places d’atterrissages différentes. |
| **Preparation:** | * Comme pour un vol MOU normal et selon les capacités de l’élève. |
| **Daily Objectives:** | * (MI) Obtenir une impression générale du degré de maîtrise de l’élève en relation avec le vol en montagne. * (Trainee) Effectuer au moins 20 atterrissages sur au moins 3 places d’atterrissages en montagne différentes afin d’y démontrer ses capacités. |
| **Flight Program:** | * En fonction des éléments météorologiques. |

**DEBRIEFING**

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| --- | --- | --- |
| **Student Pilot** | | **Instructeur** |
| **Mission** |  |  |
| **Objectives** | Atteint Non atteint  1  2  3  4 |  |
| **Points positives** |  |  |
| **Points à améliorés** |  |  |
| **Autres**  **points à**  **améliorer** |  |  |
| **Objectif**  **personnel** |  | |
| **Flight Instructor** | | |
| **Notes** | Suite à ce vol d’évaluation, le MI et l’élève (Trainee) décident d’un commun accord de poursuivre la formation MOU à partir de la leçon (marquer ce qui convient):  1.1  2.1  2.2  2.3  2.4  2.5  3.1  3.2  3.3  3.4  4.1  4.2  SIGNATURE MI: SIGNATURE TRAINEE: | |
|  |  | |

* + 1. THEORETICAL TRAINING MOU – Instruction théorique MOU

**DATE DE L’INSTRUCTION THEORIQUE:**

**Lorsque l’entraînement en vol n’a pas été terminé dans un espace de 24 mois, la leçon de théorie doit être répétée au plus tard le:**

**DATE:**

**IMPORTANT: EASA FCL.815 mountain rating states that applicants for a mountain rating shall have completed, within a period of 24 months, a course of theoretical knowledge instruction and flight training at an ATO. The content of the course shall be appropriate to the privileges sought.**

En clair cela signifie que si l’entraînement de l’élève dépasse une période de plus de 24 mois depuis le premier jour de l’entraînement, cette leçon théorique doit être répétée et une nouvelle date d’échéance déterminée.

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| **Step 1** | * ENTRAINEMENT DE BASE MOU |
| **Theory 1.1** | * Théorie sur le vol en montagne |
| **Theme:** | * L’instructeur et l’élève consultent le “mountain flying manual”, page par page, afin d’apprendre son contenu et de répondre aux questions émergentes. L’instructeur démontre comment le briefing météo, NOTAM et neige doit être conduit de manière adéquate. * Ils consultant l’AFM de l’avion et procédant à la visite de celui-ci et de son équipement. * L’instructeur présente le syllabus de formation et complète les données à disposition. |
| **Demonstration:** | * Aucune |
| **Exercises:** | * Répondre au questionnaire du manuel et compléter l’exercice de devis de masse et centrage (M&B). |
| **Preparation:** | * L’élève présentera sa licence, médical et carnet de vol, ainsi que toute autre documentation demandée par son instructeur de vol (MI) |
| **Objectifs du jour::** | * Acquérir une vue d’ensemble sur la théorie du vol en montagne. * Etre capable de manipuler l’installation ski de l’avion et d’en connaître les limitations. * Familiarisation avec le MI de l’équipement personnel ainsi que l’équipement particulier de l’avion et leur emplacement. * Compléter le test du manuel/syllabus. |
| **Programme de vol:** | * Non applicable |

**DEBRIEFING**

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| --- | --- | --- |
| **Student Pilot** | | **Instructor** |
| **Mission** |  |  |
| **Objectives** | Attained Not attained  1  2  3  4 |  |
| **Good Points** |  |  |
| **Main Amelioration Topic** |  |  |
| **Other**  **Amelioration**  **Topics** |  |  |
| **Personal Objective** |  | |
| **Flight Instructor** | | |
| **Notes** |  | |

* + 1. PRACTICAL TRAINING MOU – SKIS SECTION

PRACTICAL TRAINING MOU – FLIGHT 2.1

|  |  |
| --- | --- |
| **Step 2** | * BASIC MOU TRAINING |
| **Flight 2.1** | * Introduction flight |
| **Theme:** | * Flight preparations, check of personal and aircraft equipment, evaluation of meteorological conditions, aircraft preparation, first impressions of mountain landings. |
| **Demonstration:** | * Weather briefing * Flight Instructor describes and flies the first reconnaissance and landing on a glacier. * Use of skis and their limitations. * Checks in the aircraft before, during and after the flight. |
| **Exercises:** | * According to MI briefing and separate list (page 35-37) |
| **Preparation:** | * Student self-study of MOU syllabus and relevant chapters of the theory book: * Chapters 0, 1, 4, 6.1, 6.2, 6.6, 6.7 * MI answers any questions and completes the explanations needed for the flight. * Calculation of daily M&B, performance, density altitude, fuel. |
| **Daily Objectives:** | * Obtain a general overview of mountain flight * Be able to manipulate skis and know their limitations * With the MI, familiarization of all personal and aircraft equipment and its position inside the aircraft * Perform between 20 and 30 landings on 2-3 different surfaces |
| **Flight Program:** | * According to weather |

**DEBRIEFING**

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| **Student Pilot** | | **Instructor** |
| **Mission** |  |  |
| **Objectives** | Attained Not attained  1  2  3  4 |  |
| **Good Points** |  |  |
| **Main Amelioration Topic** |  |  |
| **Other**  **Amelioration**  **Topics** |  |  |
| **Personal Objective** |  | |
| **Flight Instructor** | | |
| **Notes** |  | |

PRACTICAL TRAINING MOU – FLIGHT 2.2

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| **Step 2** | * BASIC MOU TRAINING |
| **Flight 2.2** | * Training flight |
| **Theme:** | * Flight preparations, equipment, evaluation of meteorological conditions, aircraft preparation. * First autonomous reconnaissance of a mountain landing area (thinking aloud) * Communication with ZHR INFO/GVA INFO |
| **Demonstration:** | * Communication with ZHR INFO/GVA INFO * Checks in the aircraft before, during and after the flight. * Steep landing area (for example Petersgrat Nord) * Flare out technique * “U” turn technique on flat and steep glaciers |
| **Exercises:** | * According to MI briefing and separate list (pages 35-37) |
| **Preparation:** | * Student self-study of MOU syllabus and relevant chapters of the theory book: * Chapters 3.9, 3.10, 9 * MI answers open questions and completes the explanations needed for the flight. * Review of previous flight amelioration topics. * Calculation of daily M&B, performance, density altitude, fuel and weather briefing |
| **Daily Objectives:** | * Autonomous flight from the home base to the intended mountain landing area. Knowledge of airspaces and respect of TMA and CTR. * Demonstrate a good level of topographic knowledge (use of Swiss Topographic Maps) * Perform between 20 and 30 landings on 2-3 different surfaces |
| **Flight Program:** | * According to weather |

**DEBRIEFING**

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| **Student Pilot** | | **Instructor** |
| **Mission** |  |  |
| **Objectives** | Attained Not attained  1  2  3  4 |  |
| **Good Points** |  |  |
| **Main Amelioration Topic** |  |  |
| **Other**  **Amelioration**  **Topics** |  |  |
| **Personal Objective** |  | |
| **Flight Instructor** | | |
| **Notes** |  | |

PRACTICAL TRAINING MOU – FLIGHT 2.3

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| **Step 2** | * BASIC MOU TRAINING |
| **Flight 2.3** | * Training flight |
| **Theme:** | * Mountain tactics * Mixture settings * Human performance in relation to hypoxia and optical phenomena in mountains (whiteout, distance perception problems) |
| **Demonstration:** | * Flight over mountain passes and ridges * In-flight operation without checklists (lookout) * Check for approach * Communication on the glacier frequency 130.350 MHz |
| **Exercises:** | * According to MI briefing and separate list (pages 35-37) |
| **Preparation:** | * Student self-study of MOU syllabus and relevant chapters of the theory book: * Chapters 3.1, 3.2, 3.3, 3.4, 6.3 * MI answers open questions and completes the explanations needed for the flight. * Review of previous flight amelioration topics. * Calculation of daily M&B, performance, density altitude, fuel and weather briefing * Study of Swiss topographic maps of the relevant regions. |
| **Daily Objectives:** | * Autonomous navigation * Autonomous reconnaissance * Appropriate choice and use of aiming points (especially in relation to landing and takeoff). * Autonomous communication with ZRH and GVA INFO. * Perform between 20 and 30 autonomous landings on 2-3 different surfaces |
| **Flight Program:** | * According to weather |

**DEBRIEFING**

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| **Student Pilot** | | **Instructor** |
| **Mission** |  |  |
| **Objectives** | Attained Not attained  1  2  3  4 |  |
| **Good Points** |  |  |
| **Main Amelioration Topic** |  |  |
| **Other**  **Amelioration**  **Topics** |  |  |
| **Personal Objective** |  | |
| **Flight Instructor** | | |
| **Notes** |  | |

PRACTICAL TRAINING MOU – FLIGHT 2.4

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| **Step 2** | * BASIC MOU TRAINING |
| **Flight 2.4** | * Consolidation flight |
| **Theme:** | * Steep and flat landing areas * Types of snow * Influence of wind and corrections to be applied. * Solo flight preparation with no interventions by MI * Mountain survival tactics and procedures in case of incident/accident. |
| **Demonstration:** | * Mountain flying tactics and maneuvers (‘out’ possibilities in closed valleys) * Take-off on uneven snow (simulated) and use of the flaps handle to shorten the takeoff. * Parking on glaciers |
| **Exercises:** | * According to MI briefing and separate list (pages 35-37) |
| **Preparation:** | * Student self-study of MOU syllabus and relevant chapters of the theory book: * Chapters 0 (review), 3.5, 3.6, 6.4, 6.5 * MI answers open questions and completes the explanations needed for the flight. * Review of previous flight amelioration topics. * Weather briefing * Study of Swiss topographic maps of the relevant regions. * Study of EASA and Swiss aviation law and completion of the relative multiple choice test (page 43) |
| **Daily Objectives:** | * Attain the required level for a solo flight. * Autonomous communication with ZRH and GVA INFO and on the glacier frequency 130.350 MHz. * Perform between 20 and 30 landings on 2-3 different surfaces |
| **Flight Program:** | * According to weather |

**DEBRIEFING**

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| **Student Pilot** | | **Instructor** |
| **Mission** |  |  |
| **Objectives** | Attained Not attained  1  2  3  4 |  |
| **Good Points** |  |  |
| **Main Amelioration Topic** |  |  |
| **Other**  **Amelioration**  **Topics** |  |  |
| **Personal Objective** |  | |
| **Flight Instructor** | | |
| **Notes** |  | |

PRACTICAL TRAINING MOU – FLIGHT 2.5

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| --- | --- |
| **Step 2** | * BASIC MOU TRAINING |
| **Flight 2.5** | * Consolidation and solo flight |
| **Theme:** | * A complete autonomous flight to the intended landing area without any intervention from the MI. |
| **Demonstration:** | * According to required topics |
| **Exercises:** | * According to MI briefing and separate list (pages 35-37) |
| **Preparation:** | * Student self-study of MOU syllabus and relevant chapters of the theory book: * Chapters 1, 3.7, 3.8 * MI answers open questions and completes the explanations needed for the flight. * Review of previous flight amelioration topics. * Weather briefing * Study of Swiss topographic maps of the relevant regions. * Complete M&B exercise (page 45) with special attention to a solo flight load sheet. |
| **Daily Objectives:** | * Solo flight * Perform between 20 and 30 solo landings (observed by MI) on 2-3 different surfaces |
| **Flight Program:** | * According to weather |

**DEBRIEFING**

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| --- | --- | --- |
| **Student Pilot** | | **Instructor** |
| **Mission** |  |  |
| **Objectives** | Attained Not attained  1  2  3  4 |  |
| **Good Points** |  |  |
| **Main Amelioration Topic** |  |  |
| **Other**  **Amelioration**  **Topics** |  |  |
| **Personal Objective** |  | |
| **Flight Instructor** | | |
| **Notes** |  | |

PRACTICAL TRAINING MOU – FLIGHT 3.1

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| **Step 3** | * ADVANCED MOU TRAINING |
| **Flight 3.1** | * Consolidation flight |
| **Theme:** | * Perform approaches and landings on more difficult landing areas, with different snow, wind and lighting conditions. * Sleeping in the mountains (tent or hut) * Survival (construction of igloo or snow hole) |
| **Demonstration:** | * According to required topics |
| **Exercises:** | * According to MI briefing and separate list (pages 35-37) |
| **Preparation:** | * Student self-study of MOU syllabus and relevant chapters of the theory book: * Chapter 5 * MI answers open questions and completes the explanations needed for the flight. * Review of previous flight amelioration topics. * Weather briefing * Study of Swiss topographic maps of the relevant regions. |
| **Daily Objectives:** | * Perform between 20 and 30 landings on different surfaces * Reach a minimum of a total of 10 different surfaces * Completely autonomous decision-making in relation to navigation, mountain tactics and landings. |
| **Flight Program:** | * According to weather |

**DEBRIEFING**

|  |  |  |
| --- | --- | --- |
| **Student Pilot** | | **Instructor** |
| **Mission** |  |  |
| **Objectives** | Attained Not attained  1  2  3  4 |  |
| **Good Points** |  |  |
| **Main Amelioration Topic** |  |  |
| **Other**  **Amelioration**  **Topics** |  |  |
| **Personal Objective** |  | |
| **Flight Instructor** | | |
| **Notes** |  | |

PRACTICAL TRAINING MOU – FLIGHT 3.2

|  |  |
| --- | --- |
| **Step 3** | * ADVANCED MOU TRAINING |
| **Flight 3.2** | * Consolidation flight |
| **Theme:** | * Perform approaches and landings on more difficult landing areas, with different snow, wind and lighting conditions. * Preparations for the practical examination. |
| **Demonstration:** | * According to required topics |
| **Exercises:** | * According to MI briefing and separate list (pages 35-37) |
| **Preparation:** | * Student self-study of MOU syllabus and relevant chapters of the theory book: * Chapter 8 * According to MI briefing. |
| **Daily Objectives:** | * Perform between 20 and 30 landings on different surfaces * Completely autonomous decision-making in relation to navigation, mountain tactics and landings. * Attain the level required for the examination. |
| **Flight Program:** | * According to weather |

**DEBRIEFING**

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| --- | --- | --- |
| **Student Pilot** | | **Instructor** |
| **Mission** |  |  |
| **Objectives** | Attained Not attained  1  2  3  4 |  |
| **Good Points** |  |  |
| **Main Amelioration Topic** |  |  |
| **Other**  **Amelioration**  **Topics** |  |  |
| **Personal Objective** |  | |
| **Flight Instructor** | | |
| **Notes** |  | |

PRACTICAL TRAINING MOU – FLIGHT 3.3

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| **Step 3** | * ADVANCED MOU TRAINING |
| **Flight 3.3** | * Consolidation flight |
| **Theme:** | * Perform approaches and landings on more difficult landing areas, with different snow, wind and lighting conditions. * Preparations for the practical examination, according to specific examiner indications. |
| **Demonstration:** | * According to required topics |
| **Exercises:** | * According to MI briefing and separate list (pages 35-37) |
| **Preparation:** | * Student self-study of MOU syllabus and relevant chapters of the theory book: * Chapter 7 * According to MI briefing. |
| **Daily Objectives:** | * Perform between 20 and 30 landings on different surfaces * Perfect decision-making in relation to navigation, mountain tactics and landings. * Attain the highest standards for the examination level. |
| **Flight Program:** | * According to weather |

**DEBRIEFING**

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| --- | --- | --- |
| **Student Pilot** | | **Instructor** |
| **Mission** |  |  |
| **Objectives** | Attained Not attained  1  2  3  4 |  |
| **Good Points** |  |  |
| **Main Amelioration Topic** |  |  |
| **Other**  **Amelioration**  **Topics** |  |  |
| **Personal Objective** |  | |
| **Flight Instructor** | | |
| **Notes** |  | |

PRACTICAL TRAINING MOU – FLIGHT 3.4

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| --- | --- |
| **Step 3** | * ADVANCED MOU TRAINING |
| **Flight 3.4** | * Consolidation flight |
| **Theme:** | * According to required topics |
| **Demonstration:** | * According to required topics |
| **Exercises:** | * According to MI briefing and separate list (pages 35-37) |
| **Preparation:** | * Student self-study of MOU syllabus and relevant chapters of the theory book: * General review of all chapters * According to MI briefing. |
| **Daily Objectives:** | * Training as required |
| **Flight Program:** | * According to weather |

**DEBRIEFING**

|  |  |  |
| --- | --- | --- |
| **Student Pilot** | | **Instructor** |
| **Mission** |  |  |
| **Objectives** | Attained Not attained  1  2  3  4 |  |
| **Good Points** |  |  |
| **Main Amelioration Topic** |  |  |
| **Other**  **Amelioration**  **Topics** |  |  |
| **Personal Objective** |  | |
| **Flight Instructor** | | |
| **Notes** |  | |

* + 1. EXAMINATION – SKIS SECTION

|  |  |
| --- | --- |
| **Examination** | * EXAMINATION |
| **Examination** | * Examination flight |
| **Theme:** | * Pass MOU examination. |
| **Demonstration:** | * None. |
| **Exercises:** | * According to examiner briefing. |
| **Preparation:** | * According to examiner/MI briefing. |
| **Daily Objectives:** | * Pass the MOU examination and become a rated mountain pilot. |
| **Flight Program:** | * According to weather/examiner |

**DEBRIEFING**

|  |  |  |
| --- | --- | --- |
| **Student Pilot** | | **Instructor** |
| **Mission** |  |  |
| **Objectives** | Attained Not attained  1  2  3  4 |  |
| **Good Points** |  |  |
| **Main Amelioration Topic** |  |  |
| **Other**  **Amelioration**  **Topics** |  |  |
| **Personal Objective** |  | |
| **Flight Instructor** | | |
| **Notes** |  | |

* + 1. PRACTICAL TRAINING MOU – WHEELS SECTION

PRACTICAL TRAINING MOU – FLIGHT 4.1

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| --- | --- |
| **Step 4** | * WHEELS TRAINING |
| **Flight 4.1** | * Introduction flight |
| **Theme:** | * Flight preparations, check of personal and aircraft equipment, evaluation of meteorological conditions, aircraft preparation, approach and landing techniques on altiports and altisurfaces on wheels. |
| **Demonstration:** | * Weather briefing * Customs procedures * Flight Instructor describes and flies the first reconnaissance and landing on an altiport or altisurface * Checks in the aircraft before, during and after the flight especially to determine technical or structural problems or weaknesses. |
| **Exercises:** | * According to MI briefing and separate list (pages 35-37) |
| **Preparation:** | * Student self-study of MOU syllabus and relevant chapters of the theory book: * Chapter 7 * MI answers any questions and completes the explanations needed for the flight. * Calculation of daily M&B, performance, density altitude, fuel. |
| **Daily Objectives:** | * Obtain a general overview of an altiport or altisurface * With the MI, familiarization of all personal and aircraft equipment and its position inside the aircraft * Perform 10-20 landings of increasing difficulty on 4-6 different altiports or altisurfaces |
| **Flight Program:** | * According to weather |

**DEBRIEFING**

|  |  |  |
| --- | --- | --- |
| **Student Pilot** | | **Instructor** |
| **Mission** |  |  |
| **Objectives** | Attained Not attained  1  2  3  4 |  |
| **Good Points** |  |  |
| **Main Amelioration Topic** |  |  |
| **Other**  **Amelioration**  **Topics** |  |  |
| **Personal Objective** |  | |
| **Flight Instructor** | | |
| **Notes** |  | |

PRACTICAL TRAINING MOU – FLIGHT 4.2

|  |  |
| --- | --- |
| **Step 4** | * WHEELS TRAINING |
| **Flight 4.2** | * Consolidation flight |
| **Theme:** | * Flight preparations, check of personal and aircraft equipment, evaluation of meteorological conditions, aircraft preparation, consolidation of approach and landing techniques on altiports and altisurfaces on wheels. |
| **Demonstration:** | * Customs and local procedures * Evaluation of dangers during altiport and altisurface operations * Approach and landing techniques on very short fields using optimal techniques |
| **Exercises:** | * According to MI briefing and separate list (pages 35-37) * Weather briefing * Student pilot describes and flies reconnaissance and landings on an altiport or altisurface in an autonomous manner * Checks in the aircraft before, during and after the flight especially to determine technical or structural problems or weakness. |
| **Preparation:** | * Student self-study of MOU syllabus and relevant chapters of the theory book: * Chapter 7 * MI answers any questions and completes the explanations needed for the flight. * Calculation of daily M&B, performance, density altitude, fuel. |
| **Daily Objectives:** | * Be able to land autonomously on an altiport or altisurface * Perform precise and safe landings throughout the flights * Perform 10-20 landings of increasing difficulty on 4-6 different altiports or altisurfaces * Attain the required level to be released for flying on wheels |
| **Flight Program:** | * According to weather |

**DEBRIEFING**

|  |  |  |
| --- | --- | --- |
| **Student Pilot** | | **Instructor** |
| **Mission** |  |  |
| **Objectives** | Attained Not attained  1  2  3  4 |  |
| **Good Points** |  |  |
| **Main Amelioration Topic** |  |  |
| **Other**  **Amelioration**  **Topics** |  |  |
| **Personal Objective** |  | |
| **Flight Instructor** | | |
| **Notes** |  | |

* + 1. MANDATORY EXERCISES TO BE COMPLETED DURING THE TRAINING

**(Tick the relevant exercise after completion)**

**THEORETICAL KNOWLEDGE TO BE COVERED IN LESSON 1.1**

**(S)= SKIS**

**(W)= WHEELS**

**(SW)= SKIS AND WHEELS**

* **(SW)** Introduction to the theory book, documents and manuals relating to MOU instruction
* **(SW)** Use of the EASA mountain syllabus
* **(SW)** Regulatory aspects of the mountain rating, minimum heights, classification of surfaces, PIC responsibilities, flight plan
* **(W)** Customs procedures for international flights
* **(SW)** Mountain tactics, obstacles to aerial navigation, dead reckoning, path over relief, flying in a valley, etc.
* **(SW)** Meteorology (air masses, relief effect on movement of air masses, altimetry, effect on flight procedures, turbulence, typical weather situations)
* **(SW)** Density altitude (DA) calculation
* **(S)** Types of snow, glacier dynamics, crevasses, snow bridges, avalanches
* **(S)** Personal and glacier equipment check
* **(SW)** Weather and briefing preparations
* **(SW)** Approach and reconnaissance techniques
* **(S)** Landing and take-off procedures on snow-covered surfaces
* **(SW)** Abnormal and emergency procedures
* **(W)** Altisurface techniques and differences compared to glacier techniques
* **(SW)** How to react in the case of incidents or accidents
* **(SW)** Survival in the mountains, building a shelter, food and beverages, use of emergency equipment, etc.
* **(SW)** General overview of human performance in relation to cold, nutrition, hypoxia, radiance, hydration, fatigue, etc.
* **(SW)** Introduction to landing surface specifications, rules, parking, safety and emergency procedures
* **(SW)** Introduction to the applicable aircraft documents (AFM, checklists, specifications, skis certification, M&B)
* **(SW)** Documentation (maps, charts, internet, etc.)

**FLIGHT TRAINING**

**(S)= SKIS**

**(W)= WHEELS**

**(SW)= SKIS AND WHEELS**

* **(SW)** Aircraft walk-around
* **(SW)** Extension and retraction of the skis while on ground
* **(SW)** Checklist
* Aircraft preparation
* Before engine start
* After engine start
* Taxi
* Before departure
* Climb
* Cruise
* Descent & approach
* Final
* After landing
* **(SW)** Handling of aircraft on the ground
* **(SW)** Engine hand starting (swinging propeller) due to flat batteries or aircraft without a starter motor
* **(SW)** Briefings for departure, arrival, emergencies
* **(SW)** Map reading
* **(SW)** Collision avoidance techniques
* **(SW)** Safety check before departure
* **(SW)** Choice of take-off axes
* **(SW)** Take-off with a tail wheelaircraft
* Take-off on concrete runway
* Take-off on grass runway
* Crosswind take-off
* **(S)** Take-off acceleration according to snow conditions
* **(S)** Skidding take-off avoidance
* **(W)** Altiport or altisurfacetake-off on wheels (concrete, grass and gravel)
* **(SW)** Use of skis/wheel hydraulic pump and handling of malfunctions
* **(SW)** Simulated engine failure during T/O and immediately after departure
* **(SW)** Retraction or extension of skis after departure
* **(SW)** Stalls and steep turns with skis mounted (limitations apply according to the AFM)
* **(SW)** Engine mixture techniques
* **(SW)** ATC communications in particular communications on the glacier frequency 130.350 MHz
* **(SW)** Reconnaissance of the landing area including evaluation of gradient
* **(W)** Altiport or altisurface reconnaissance of the landing area and differences between glaciers and open country (trees, poles, pedestrians, cattle, etc.)
* **(SW)** Autonomous approach and landing, taking into consideration corrections to the landing path and precise flare and touchdown
* **(SW)** Selection of landing axes
* **(S)** Landing techniques on glaciers
* Headwind landing
* Tailwind landing
* Crosswind landing
* **(W)** Landing techniques on altisurfaces
* Headwind landing
* Tailwind landing
* Crosswind landing
* **(S)** Flare out technique on
* Flat landing areas
* Rising landing areas
* Steep landing areas
* **(W)** Flare out technique on
* Flat landing areas
* Rising landing areas
* Steep landing areas
* **(W)** Landing techniques on altisurfaces
* Very short landing area
* Medium length landing area
* **(S)** U-turn technique
* **(S)** Stopping and parking on a glacier
* **(SW)** Aircraft preparation for a night stop in the mountains
* **(W)** Securing the aircraft overnight taking into consideration access to the altiport or altisurface and villages or roads in the vicinity of the intended parking area
* **(S)** Bivouac preparation (igloo, hole, hut), walking with snowshoes
* **(S)** Simulated emergencies on a glacier (aircraft breakdown, poor weather, no radio reception, passenger illness)
* **(SW)** Departure preparation
* **(SW)** Take-off on a glacier
* **(W)** Take-off from an altisurface or an altiport
* **(SW)** Use of higher flaps settings during take-off
* **(S)** Simulated engine failure during take-off and immediately after departure on a glacier
* **(SW)** Simulated engine failure in the mountains
* **(S)** Types of snow: hands-on exercise
* **(SW)** Landings with a tail wheelaircraft
* Landing on a concrete runway
* Landing on a grass runway
* Crosswind landing
* **(W)** Use of different flaps settings according to various situations
* **(SW)** Mountain pass crossing techniques
* **(SW)** ‘Out’ maneuvers for exiting a closed valley
* **(SW)** Dealing with wind and turbulence
* **(SW)** Use of up-draughts and ascending air to improve aircraft performance in mountains
* **(SW)** Introduction to noise sensitive areas, low passes, wildlife in the mountains, etc.
* **(SW)** Introduction to the dangers of mountain resorts (cableways, antennae, etc.)
* **(W)** Procedures in case of incidents or accidents abroad
* **(S)** Procedures in case of incident or accident over Swiss territory
* **(S)** Leaving the glaciers and returning to home base
* **(SW)** Descent and approach (limitation of skis)
* **(SW)** Parking
* **(SW)** Post-flight duties
* ……………………………………………………………………………………………………………………………………………………………
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* + 1. LANDING RECORD – SKIS SECTION

| **SKIS SECTION- MOUNTAIN FLIGHT TRAINING RECORD** | | | | | |
| --- | --- | --- | --- | --- | --- |
| **NAME OF THE LANDING AREA** | | **DATE** | **LANDINGS** | | **INSTRUCTOR** |
| **LOCATION** | **AIP CODE** | **DUAL** | **SOLO** |
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| **TOTAL** |  |  |  |  |  |

* + 1. LANDING RECORD – WHEELS SECTION

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| **WHEELS SECTION- MOUNTAIN FLIGHT TRAINING RECORD** | | | | | |
| **NAME OF THE LANDING AREA** | | **DATE** | **LANDINGS** | | **INSTRUCTOR** |
| **LOCATION** | **AIP CODE** | **DUAL** | **SOLO** |
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* + 1. AVIATION LAW TEST

**Review questions concerning EASA and Swiss aviation law**

1. What does a pilot need in order to be entitled to fly an aircraft class or a variant?
2. An examination with a FOCA examiner.
3. An examination or a familiarization with the aircraft class or variant to be flown and to be familiar with the procedures and equipment on that type of aircraft.
4. A familiarization with an experienced pilot is sufficient.
5. No familiarization or examination is needed. Just fly.
6. What form of recent experience is required in order to be entitled to fly as PIC with a passenger on board?
7. 6 Landings and 3 take-offs in the past 12 months.
8. 3 Landings and 3 take-offs in the past 3 months on any aircraft
9. 3 Landings and 3 take-offs in the past 3 months on the type to be flown.
10. 1 Landing with a Flight Instructor in the past 10 days.
11. How many hours flight time and how many of these as PIC does a pilot require in order to apply for a mountain rating according to EASA?
12. 200h/ 100h.
13. 150h/ 50h.
14. No limitation applies.
15. 300h/ 100h.
16. What is the minimum number of training landings required and on how many different surfaces before an MOU examination can be sat?
17. 250 landings/5 surfaces.
18. 250 landings/10 surfaces.
19. 300 landings/all available surfaces.
20. When the MI deems the pilot is ready and takes responsibility for this decision.
21. According to EASA the holder of a MOU rating is entitled to take passengers for mountain landings if:
22. The flight is not commercial and 20 landings have been performed in a mountainous environment in the past 12 months.
23. There is good weather with less than 10 kts of wind.
24. The flight is made within a 50 miles radius of the home base.
25. No limitations apply if the rating is valid.
26. Who is the responsible authority/person for training purposes when landing outside designated areas below 2000m AMSL?
27. The Flight Instructor
28. The Federal Office of Civil Aviation (FOCA).
29. Every pilot in command (PIC).
30. Landing outside airports is forbidden.
31. What elevation defines a mountain landing area? How many of these areas are certified in Switzerland?
32. 1100 m AMSL/ 48 areas.
33. 2000 m AMSL/ 28 areas.
34. 1100 m AGL/ 48 areas.
35. No specifications have been defined by the Federal Office.
36. If the cloud base is lower than expected, are you allowed to cross a mountain pass at 300 ft/AGL
37. Yes, there are no limitations in mountainous environments
38. No, the minimum height over uninhabited terrain is 500 ft AGL.
39. Yes, because the minimum height is 300 ft AGL over all Swiss territory.
40. Only if a flight instructor is on-board and the aircraft has IFR approval.

|  |
| --- |
| **AVIATION LAW TEST CORRECTION** |
| REVIEW OF MISTAKES |
| TEST SUCCESFULLY PASSED (min 80%, 1 point per question)  YES\_\_\_\_\_\_\_\_\_% NO\_\_\_\_\_\_\_\_% |
| DATE |
| MI SIGNATURE |

* + 1. MASS AND BALANCE TEST

**Glacier flight with PA-18**

ACFT empty mass and arm according AFM lbs 1272

Pilot lbs 150

MI lbs 170

Baggage lbs 38

Fuel 36 USG \_\_\_\_\_\_\_\_\_\_

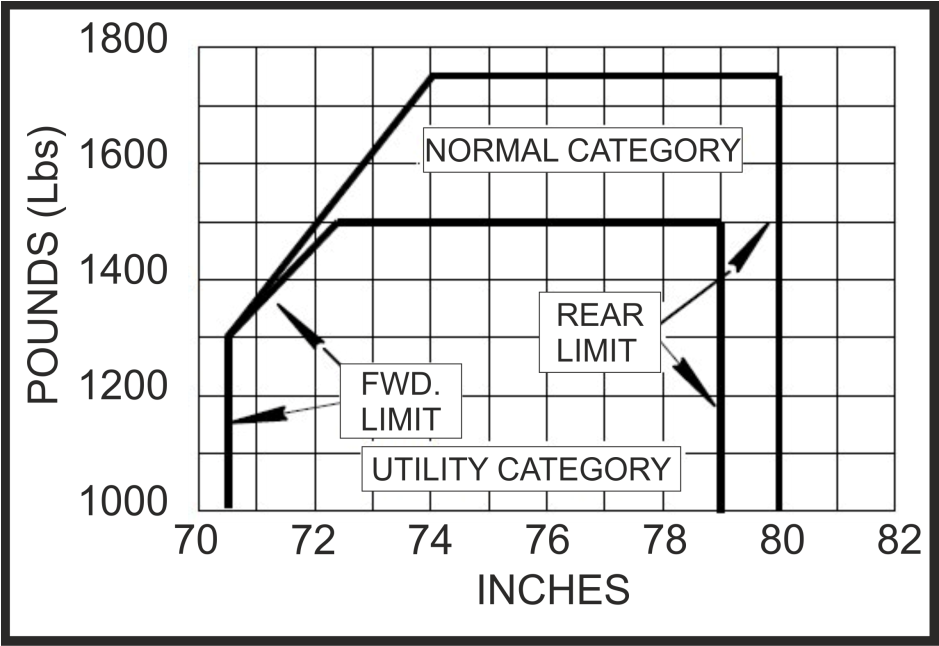
**Question:**

Using the data above, are the maximum take-off mass and the center of gravity within envelope limits? Write the result in the table below and indicate the CG position in the envelope graph.

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Mass (lbs) | Arm (inches) | Moment |
| Aircraft |  | 72,88 |  |
| Pilot (front seat) |  | 71 |  |
| Passenger (rear seat) |  | 97 |  |
| Baggage |  | 117 |  |
| Fuel (36 USG) |  | 84 |  |
| Total |  |  |  |

TOM =\_\_\_\_\_\_\_\_\_\_\_\_\_

CG =\_\_\_\_\_\_\_\_\_\_\_\_\_

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Notes:

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| --- |
|  |
| **MASS AND BALANCE TEST CORRECTION** |
| REVIEW OF MISTAKES |
| TEST SUCCESFULLY PASSED (correct results in both TOM and CG location)  YES\_\_\_\_\_\_\_\_\_ NO\_\_\_\_\_\_\_\_ |
| DATE |
| MI SIGNATURE |

* + 1. TRAINING COMPLETION CONFIRMATION

|  |  |
| --- | --- |
| **STUDENT PILOT INFORMATION** | |
| First name |  |
| Last name |  |
|  | |
| License type |  |
| License number |  |
| Validity |  |
|  | |
| Medical certificate |  |
| Validity |  |

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| **SKIS SECTION - SUGGESTED MINIMUM REQUIREMENT BEFORE EXAMINATION** | |
| Total flight time (suggested minimum 200h) |  |
| PIC time (suggested minimum 100h) |  |
| Winter landings (NOV-MAR) (suggested minimum 50) |  |
| Summer landings (APR-OCT) |  |
| Total landings (suggested minimum 250) |  |
| Total landing surfaces (suggested minimum 10) |  |

***We hereby confirm that after completing his/her flight training, the above mentioned student pilot has been deemed ready for the MOU examination and all data has been checked and found to be in order.***

* Logbook with inscription: *“MOU training on skis successfully completed”*, date, signature and stamp.

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| --- |
| Mountain Instructor  Date, signature and stamp  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

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| Chief Flight Instructor/Head of Training  Date, signature and stamp  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

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| **WHEELS SECTION - SUGGESTED MINIMUM REQUIREMENT BEFORE RELEASE** | |
| Total flight time (suggested minimum 200h) |  |
| PIC time (suggested minimum 100h) |  |
| Gravel runway landings (suggested minimum 25) |  |
| Grass runway landings (suggested minimum 25) |  |
| Total landings (suggested minimum 50) |  |
| Total altiport or altisurface landings (suggested minimum 8) |  |

***I hereby confirm that after completing their flight training, the above mentioned student pilot has been deemed ready to be released for altiport or altisurface landings on wheels***

* Logbook with inscription: *“MOU training on wheels successfully completed”*, date, signature and stamp.

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| Mountain Instructor  Date, signature and stamp  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

* + 1. SKIS SECTION - EXAMINATION CHECKLIST

At the end of the training and before meeting the examiner for the skill test, it is of utmost importance to have all paperwork in order. This checklist must be completed by the Student Pilot and the Mountain Flight Instructor together. Tick all positions.

* Examiner\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Examination date, time and location \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Licenses (expiry date)
* Ratings (expiry date)
* Medical (expiry date)
* Valid ID document (passport or ID card)
* Student Pilot’s mountain equipment (according to theory book)
* Aircraft documents (check validity)
* Aircraft mountain equipment
* Completed training syllabus/theory book
* Training completion confirmation (Page 47) completed and signed by MI and CFI/HT
* Logbook with the inscription: *“MOU training on skis successfully completed”*, date and signature
* Form 60.627 *Mountain Rating (A)* [Extension for mountain landings, aircraft] completed and signed by CFI/HT/ATO
* VFR charts/maps
* NOTAM
* DABS
* METEO
* M&B
* Fuel calculation
* Performance

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