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| http://globalaccessibilitynews.com/files/2012/03/Able-Flight-logo.jpg  Ground Course  2017 | Lucero Durán Trinidad  Able Flight Ground Course |

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Introduction

Able Flight is a non-profit organization that provides scholarships to disabled individuals so that they may come to the university to obtain a Sport Pilot license. As part of the program, the university offers a flight and ground course to the individuals selected to come. Thus, this project was started to create a learning module for the university to teach the ground course portion of the program. There are two objectives for the ground course. These are:

1. To teach the material necessary to pass the Federal Aviation Administration (FAA) Sport Pilot Knowledge Exam with an 80% or higher,
2. For students to transfer the knowledge obtained in the course into flying.

Using the Interactive Model of Program Planning, the Goal Theory of Motivation, and the ADDIE model, this course will consist of thirteen sessions over the course of four weeks. The fifth week of the program will be time given to each student to schedule and take the FAA knowledge exam. Each two-hour session will cover a different topic, these include: weather theory, aeronautical decision making, airplane systems, etc. Lastly, due to the accelerated pace of the course, the students will be required to keep up with any assigned readings, videos, and assignments as well as keeping a proper amount of home studying to be successful.

Scope of Project

**Course Creator**

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Graduate Student – Masters of Aviation Human Factors

Purdue University | School of Aviation and Transportation Technology

**Responsibilities of Course Creator**

The responsibility of the course creator is to:

1. Design and develop the Able Flight ground course. The development of the course should have an emphasis on the creation of a structure, “back bone”, to the course in order to have ease of transition and change.
   1. Create learning objectives for the course and for each individual teaching session.
   2. Incorporate the Goal Theory of Motivation into the design and development of course.
   3. Use the ADDIE model to document and aid in the creation of the course.
2. Ensure the course covers all the material necessary for the learners to pass the FAA’s Sport Pilot Knowledge Exam.

**Need for the Course**

The ground course will fulfill the program’s requirement to educate learners to pass the FAA’s Sport Pilot Knowledge Exam. Passing the exam is required in order for the learners to be able to take the Sport Pilot Practical Exam and earning a sport pilot license, which is the objective of the Able Flight training program. Furthermore, the non-profit organization Able Flight is expecting Purdue University to teach this ground course in conjunction with the flight course and have the learners finish both courses in the six-week program.

**Summary of the Course**

Every summer Purdue University as agreed with the non-profit organization Able Flight, provide a training program for the attainment of a sport pilot license. The training program includes a flight and ground course that last for a total of six weeks. In the past, the ground course has been taught without any guidance given to instructor. Therefore, this course, aside from being designed to teach the material needed to pass the knowledge exam, will also include structure and guidelines for ease of transition of instructors and course changes.

The objective of the course is to teach the material necessary to pass the FAA’s Sport Pilot Knowledge Exam with an 80% or higher and to transfer this knowledge into the learner’s flying. The material to be covered in this course will include: Airplane flight controls, fundamentals, and instruments, airport operations, FARs, aeromedical factors, aeronautical decision making, airspace and sectional charts, weather theory and services, performance and weight & balance, navigation and preflight operations, and airplane systems.

Due to the amount of material to be covered and the time frame given, the students will be required to keep up with any assigned readings, videos, and assignments as well as keeping a proper amount of home studying to be successful. The FAA’s knowledge exam needs to be completed prior to the students taking the sport pilot practical exam. Therefore, the ground course will be set to be completed in four weeks. The last week, the fifth week, will be an opportunity for the students to schedule and take the FAA’s knowledge exam. This will leave the sixth week of the program for scheduling and taking the practical exam. The course will be every day, Monday through Friday, meeting for a period of two hours. Each session is expected to run from 1:30-3:30pm.

In order to develop and design the course, the course creator will use the ADDIE model. This model will allow the creator to analyze all the components needed for the design and development of the course. The design will start with gathering the materials and resources the students will need during the course. Next, a syllabus will be created with all the topics, mentioned above, and assigned readings. Last, the course creator will make outlines of the material to be covered in the lecture. The outlines will include lecture objectives, assigned readings, and an outline of the material to be covered.

Once the outlines have been made, the course creator will be able to develop the appropriate method for delivery. Some delivery options include, but are not limited to: power point presentations, group activities, videos, lectures, and discussions. All the materials developed, including course outlines, will be uploaded to the Course Sites platform. Course Sites is a free version of Blackboard that doesn’t require any affiliation to Purdue University to create a log in account. Therefore, the course instructor and learners will be able to create a free account and have access to the materials anytime without having to create any extra paperwork with the university. The goal is that during the summer of 2017 the course will be implemented and a thorough evaluation can be made to see any changes that need to be made to the course or materials. This will allow for the completion of the last two steps of the ADDIE model.

**Learner Analysis**

|  |  |
| --- | --- |
| **Who** | Adults and young adults with disabilities, usually spinal cord injuries and some hearing impaired individuals. |
| Around 5-6 students mostly male. Usually try to get at least one female in the group. |
| **Motivations** | Individuals receive a scholarship from non-profit organization, Able Flight, to come to the campus for the program. |
| The students apply for the program and must meet various criteria and go through two interviews to be chosen from all that apply in the nation. Therefore, once students are selected, they come motivated to learn. From past students that have come through the program, it’s evident that they don’t come to quit and will do anything required to make sure they get their sport pilot license. |
| **Constraints** | Physical disabilities:   * Usually consist of wheelchair * Sometimes bring service animal * Quadriplegics – sometimes * Deaf or hard of hearing   Age:   * Since older individuals, learning rate is different than college students. * Additionally, many older individuals may have been separated from academia for a time that learning and studying techniques may have to be retaught.   Time:   * Have routines they follow to get up and go through the day * Travel slower so take more time to get things done compared to a “normal” person * Fly twice a day, so may not have much time left for studying or homework.   Technology:   * Depending on backgrounds, students may have a strong or weak knowledge of technology use. * Students may not have technological devices with them, or may have limited access. Devices can include, laptop, iPad, tablet, smart phone, etc. * This may affect the use of Course Sites |
| **Prior Knowledge/Skills** | Depending on the background of student, he/she may   * Be from military, sometimes accident occurred on duty. Some may have been from Air Force or a parachuting group * Student may have some prior aviation knowledge either from before the accident or from self-taught classes before or after accident.   From Able Flight foundation, students receive the Sporty’s private pilot knowledge learning modules to help give students some material of the knowledge that will be covered in the program. Students are not required to go through learning module, but are highly encouraged to do so. |

(Durán, L. 2016. *Design Document*. EDCI588 Final Project.)

**Philosophies Considered in Development of Course**

The main theory that is considered in the development of the course is the Goal Theory of Motivation. This theory explains that students’ motivations are run through the use of goals, specifically mastery goals. Mastery goals are goals created for an individual to master a task or become an expert in a certain area of knowledge, making them into an intrinsic type of motivation. One way that students can create mastery goals is through the use of the TARGET acronym. This acronym allows for the implementation of various tasks/activities that allow group work, are able to be completed in a timely manner, and allow individuality and control (Schunk, D. H. et al, 2014).

The second philosophy that is considered in the development of the course is from the Interactive Model of Program Planning (Caffarella and Daffron, 2013). One aspect of this model is the five areas of fundamental knowledge that an individual must have knowledge of for the creation of the course. Out of these five, adult learning is the component that will be used in this course creation. As explained in the textbook by Caffarella and Daffron, adults can learn through experiential learning. Since the learners in this course will also be flying an airplane, and the instructor will be a flight instructor, different experiences will be able to be included in the course that should help with the understanding of material.

**Resources**

The following table shows the availability of resources needed for the course.

|  |  |
| --- | --- |
| **Financial Resources** | Through the partnership of Purdue University and Able Flight, the program is paid for the duration of the six weeks. This includes payment for instructors, lodging, airplane use, materials, fuel, etc. |
| **Teaching Environment** | The ground course will take place at the airport in the Niswonger building.   * The course will be in a lecture hall that can fit at least 30 people and has adjustable tables/chairs. * The use of a computer lab may be required, which can be found in the same building. * The lecture hall is accessible to students as it is in the main floor of building and at the airport. * The lecture hall will have to be reserved ahead of time, but is easily done through Purdue’s reservation system. |
| **Materials** | Textbooks, sectional charts, videos, assignments, advisory circulars, PTS, and any other materials will be provided to the students by the instructor (through Course Sites or in paper) or through the FAA website. |
| **Instructor** | For the ground course there will be one main instructor to teach the material. As the instructor will also be a flight instructor and employee of Purdue, which includes other responsibilities, the availability outside of class will be limited. |
| **Parking** | The airport has handicap parking slots that should accommodate the number of learners in the class. The only constraint is that some of these parking slots are farther away from the main door. |

**Technology**

The available technology that is accessible for the course includes technology found in the lecture hall to be used. It includes a projector that can receive input from the classroom computer, laptop, or Doc Cam. A chalkboard and audio system are also available in the lecture hall. There are also various platforms that could have been used to provide materials to learners including Google Docs, Dropbox, Blackboard, Course Sites, or email, with Course Sites being selected for the course. Lastly, the learners will have access to a computer lab in case they don’t have a personal technology tool, like a laptop or tablet, that they can access the course website.

**Ethical Considerations**

One ethical consideration that needs to be addressed is the potential discrimination of learners due to their disabilities. Since society has biases of individuals with disabilities, the instructor of the course is subject to these biases. Therefore, to ensure that the learners of the Able Flight program are treated as any other student in a flight/ground training course, the instructor must ensure that any special treatment is provided only if the individual asks for it. In other words, the instructor must ensure he/she is treating each learner as if they were a ‘normal’ person. A second ethical consideration is ensuring that if an extension of an assignment or a change in delivery method of material for a student is done, the instructor must ensure that this change is also available to the rest of the learners to prevent the creation of favoritism.

Context Analysis

**Human Element**

In order to create the Able Flight ground course, different individuals will have to be contacted to ensure the course is meeting the objectives set forth and provides the quality that is required. The following chart includes the various individuals who will be involved in the creation of the course, with their titles and short description of their involvement.

|  |  |  |
| --- | --- | --- |
| Charles Stites | Executive Director of Able Flight | He is part of selection process of participants into the program, ensures funding is set to run the program, and requires regular updates on the progress of each participant. |
| Bernie Wulle | Coordinator of Able Flight at Purdue University  Associate Professor of SATT | Establishes good relationships between the university and Able Flight and Swift Fuels. |
| Wesley Major | Coordinator for Students  Graduate student of SATT  Graduate of Able Flight Program | Establishes communication with students prior to coming to the university, provides information on living conditions and program overview. |
| Professor Young | Professor of SATT | Reviews and provides feedback on the planning made for the course. |
| Flight Instructors | Able Flight Instructors | Provides insights on each student and may aid with studying and/or teaching of material. |
| Previous Students | Graduates of Program | Provide feedback on the set-up of the course as well as any changes they would like to see based on their experiences. |
| Ronda Cassens | Chief Flight Instructor Purdue University | Ensures that Able Flight instructors will not have scheduling conflicts with university students and will authorize hangar keys to each instructor. |
| TBD | Chief Flight Instructor Able Flight | Selection, training provider, and coordinator with each Able Flight instructor. Ensures students are on track and answer any questions/concerns brought up by any party involved in the flight training course. |
| Brian Dillman | FAA DPE  Associate Professor of SATT | Does practical exams with each student and provides feedback on weak areas (of previous students) to ensure those areas are improved for the next class. Answers any questions regarding FAA and IACRA. |
| Brian Stirm | Maintenance Technician | Ensures every aircraft used in program has met required maintenance inspections and orders fuel from Swift Fuels. |
| Steve Stombaugh | FAA appointed Inspector for Purdue University’s Flight Program | Is available to answer any questions regarding FARs and requirements for proper training for Sport Pilot license. |
| ATC Manager and Controllers | Lafayette Tower (ATC) | Provides procedures that can be used to efficiently use frequency, and practices required with deaf pilots. Encourages open communication between program and ATC to ensure safety and proper adherence to FARs. |

**Organization**

Able Flight is a non-profit organization whose mission is “to offer people with disabilities a unique way to challenge themselves through flight and aviation career training, and by doing so, to gain greater self-confidence and self-reliance” (About Us, 2016). The organization was created by various professionals in the aviation industry who wanted to share the love of flying with a subgroup of society that is not normally seen participating in the industry. The organization is “supported through the generosity of donations and sponsorships of individuals, foundations, and corporations” (About Us, 2016). In other words, without sponsors and donors the organization and the program would not have the funding necessary to provide scholarships to the participants and run the program.

Additionally, with Charles Stites as the Executive Director, the organization has been able to create partnerships with Purdue and Ohio State Universities to provide the flight and ground training courses. Furthermore, the organization has created partnerships with individuals around the country who allow the universities and students to use their aircraft for training during the program. Lastly, the organization provides further scholarships and networking with aviation professionals to provide graduates of the program further study in the aviation field or job opportunities.

**Wider Environment**

As this ground course will be using facilities owned by Purdue University, the course planner has to consider the university’s policies and rules. These facilities include: Niswonger Building, Hangars 5, 6, and 6W, First Street Towers, and dining halls. Therefore, all participants and instructors have to have knowledge of Purdue’s rules of conduct, policies concerning illegal substances and alcohol, academic policies, emergency plans, and any other policies required by the university. Additionally, due to the risk of injury involved in the aviation industry, any policies stated by the flight program and/or department (School of Aviation and Transportation Technology, SATT), must also be followed. Lastly, since the ground course will run over the months of May-July, it will coincide with the summer semester. Therefore, scheduling of the classroom will have to be done in advance and through the scheduling system set up by the university to ensure it will not conflict with any summer classes.

Purdue Aviation, the Fixed-Based Operator, FBO, on the field provides materials required by the students during the program as well as providing a location to take the FAA’s written exam. Therefore, considering the hours of operation and ordering materials on time will be crucial to ensure every student has materials they need on time. Additionally, since any other pilot in the area can schedule to take a written exam, not just Able Flight participants, and the FBO is the only local place that can provide this service, ensuring the FBO will be open and available during time(s)/day(s) needed by participants to take their written exam is important. Coordinating ahead of time or ensuring every participant understands how to schedule a time will need to be done at the beginning of the course or prior to the participants coming to the university.

Swift Fuels is a local company that creates biofuel that has various contracts with other organizations and is subject to ups and downs of the economy. Therefore, it could be that Swift Fuels may potentially not be able to provide the fuel required to fly the aircraft in the program. A backup plan would be encouraged to be created in the case that such a situation occurs. Open communication with Swift Fuels’ representatives is required to ensure warning of a situation can be gathered before running out of fuel becomes a reality.

Lastly, since Able Flight runs on donations and sponsorships, considering that funding can reduced or terminated at any time can be a possibility. Also, with aircraft being donated by private individuals, these individuals could request their aircraft back at the end of the six week or earlier, regardless of whether students got done or not, which could require a halt to the ground course. Furthermore, the FAA could issue new regulations regarding sport pilot licenses, maintenance requirements, written requirements, or general pilot requirements that could affect the program at any time.

**Obtaining Information for Course**

Information required to plan the course can be gathered from various sources. The following table shows the sources and what information they provide.

|  |  |
| --- | --- |
| Graduates from Program | * Feedback on how course was run during their participation and what they would like to see changed or maintained. * Provide ideas on class activities |
| FAA website – [www.faa.gov](http://www.faa.gov) | * Advisory Circulars * Practical Training Standards * FAR/AIM * Handbooks   + Pilot’s Handbook or Aeronautical Knowledge   + Airplane Flying Handbook   + Weather Services Handbook |
| Purdue Aviation | * Sport Pilot GLEIM Book * Sectional Charts * Same information on faa.gov – print form |
| Professor Dillman and/or Young | * Feedback on course planning * How to run a class, activities, readings, etc. |
| Flight Instructors | * Readings – books or articles * Teaching methods * Powerpoints on various areas covered * Ideas on class activities |
| Bernie Wulle and/or Charles Stites | * Condition of Able Flight   + Participants coming to course   + Funding   + Start and End dates for program * Selection Criteria for ground instructor |

**Power Structure**

The power structure for the program starts with Able Flight’s Executive Director Charles Stites. Mr. Stites is involved in selection of participants in the program, works to gather donations and sponsors, and maintains good working relationships with the universities. Once the participants are selected, funding and aircraft secured, communication with each of the universities’ point of contact is made; which at Purdue University, Bernie Wulle fulfills this role. Also, due to his position, Mr. Stites is the main stakeholder of the program, which includes the most power.

Once Bernie Wulle receives information on participants he ensures to pass the information along the Chief Flight Instructor for Able Flight so he/she can acquire flight instructors and prepare for the flight portion of the program. The Chief CFI will provide materials for flight instructors and provide aid any help needed from instructors or students. Also, the chief CFI can communicate with Bernie Wulle or Mr. Stites about any issues that may come up with the flight or ground portion of the program.

Additionally, Bernie Wulle contacts Purdue’s housing facilities to ensure rooms are reserved at First Street Towers for the participants during their stay here. He also contacts Wesley Major so he can help with these duties as well as establish more personal communication with participants. Along with these duties, Bernie Wulle, Wesley Major, Able Flight’s Chief CFI, and occasionally Mr. Stites, will work to find a ground instructor. Unless a flight instructor or Chief CFI has decided to run the ground course, then the search for the ground instructor starts. Once the ground instructor has been selected, he/she is given the objectives of the course, the GLEIM Sport Pilot handbook and the number of students in the course. From here, the instructor has freedom to teach the course as he/she wishes.

Support for the Course

**Support Before, During, and After Program**

In order for the program to come out of the design board and implemented, support needs to be gathered from various sources and individuals. The following table describes various sources that support can be gathered from, the type of information these sources will provide, and how that is providing support for the program.

|  |  |  |  |
| --- | --- | --- | --- |
| **Source** | **Before Program** | **During Program** | **After Program** |
| **Participants (Former and New)** | Former Participants:   * Provide feedback on what in the course they would like to see changed to improve the course. * Provide feedback on what areas should have more emphasis – based from taking written exam.   New Participants:   * Share ideas on what they expect from taking the course. * Provide feedback on how technology “savy” they are and what technology to use | Current Participants:   * Feedback on whether the course is too demanding, if enough time has been given to complete all required material. * Feedback on whether material is being understood – if not a change in course syllabus can be made to accommodate * Feedback on instructor teaching and clarity, professionalism. | * Feedback on what can be changed for next time. With ideas on how to change * Feedback on areas that require more/less emphasis * Feedback on resources that were helpful/not helpful * Provide help with re-structuring of course, or making changes |
| **Support** | As a planner, if participants are allowed to be involved in the planning process before and after the course, they may find the experience more meaningful and indirectly create more motivation to participate. Also, if this is felt from participants, they can be more likely to share positive aspects about the program that would draw more people applying for it or helping out. Furthermore, during the program if participants are asked whether or not the course is being conducted to meet the objective(s) and their feedback is taken into consideration, they feel like they have authority over their learning and rate of learning. This authority can create a feeling of accomplishment and self-esteem may increase that will provide support to continue taking course. | | |
| **Immediate Supervisor** | * Provide feedback on whether the course developed will meet the objective(s) of organization * Provide feedback on course structure, workload, time management, availability of resources, etc. * Identify areas that are weak/strong in curriculum | * Provide feedback on teaching style, ability * Could gather students’ views on the course (especially if there is a high power distance between instructor and students) | * Provide evaluation on course implementation, delivery, and adherence to mission and objectives * Feedback on how it has been viewed by upper management |
| **Support** | Support from immediate supervisor is important as it can increase the chances of the course actually being implemented and being viewed as positive from higher management. By asking for feedback and advice during all three stages of the program (as shown above) the immediate supervisor will acknowledge that not only have they been “in the loop” throughout and that their advice and feedback is appreciated and considered. With this, the immediate supervisor can give further support to the program, especially when dealing with higher management. | | |
| **Mid and Upper Level Managers** | * Provide support base needed if required * Provide contacts with other trainers/planners that could aid in course * Ensure course will meet organization’s mission and objectives | * Feedback on how whether course is on time and meeting objectives | * Feedback on whether the course actually met objectives – if not can provide ideas on changes that can be made |
| **Support** | Mid and upper level managers can provide the support necessary to run the program, as they are mostly the ones concerned with funding, partnerships, etc. By having them involved in the planning process and during implementation and evaluation of the course, these managers will realize that their inputs and opinions are considered and appreciated. | | |

**Organization’s Mission Statement**

Able Flight’s mission statement is as follows:

Able Flight’s mission is to offer people with disabilities a unique way to challenge themselves through flight and aviation career training, and by doing so, to gain greater self-confidence and self-reliance.

(About Us, 2016)

The program that is currently being developed meets the organization’s mission statement as it’s providing training in an aviation career that is both challenging and rewarding. The aviation industry is one that is not forgiving to blatant disregard of the safety culture, it requires much updated and current knowledge by the individual, it requires strong communication and networking skills, etc. that make it an extremely challenging and competitive industry. Therefore, by providing a ground course that challenges to the knowledge base required to gain a pilot’s license, the participants in the program will, like the mission statement says, “….challenge themselves…to gain greater self-confidence and self-reliance.”

**Major Barriers**

The biggest barriers this course may have is time and workload. Since the course is to be taught at an accelerated course (five weeks total), it allows very small flexibility to the curriculum. Therefore, if students are struggling with a topic or their rate of learning is slower than expected, the course may not be able to be completed as planned and on the spot changes would have to be made. By having a Plan B or by adding flexibility to the course, this may be avoided. Additionally, as students will also be taking a flight course, the amount of time allotted for home studying may be limited. With this in mind, the amount of workload required for the course will have to be properly analyzed so that participants don’t feel overwhelmed or frustrated from the very beginning of the program.

In an attempt to reduce, and potentially solve these issues, the course will be reviewed by various individuals who have experience in the teaching environment, have gone through the program, or know the details of the Able Flight organization.

**Participation of Wider Community**

At the level the course planner is at, he/she would not need participation from the wider community to get the course implemented. The organization, Able Flight, has already established the partnership with Purdue University and agreed that the course will be taught. Also, support from the wider community has already been gathered by the organization’s executive director and board members. Without the wider community the program would have no funding and support base to ensure a successful outcome.

**Support Through Social Media and Internet**

Most communications between the immediate supervisor and mid/upper level management will be done in person, or through phone calls, the use of internet communication will be limited. E-mails to the executive director will be required to keep him updated of the progress of the participants, any issues arising with students, instructors, maintenance, etc. that he may be able to help resolve, and to send videos or photos of accomplishments made by the participants. The use of social media and internet will be used more extensively to gather support from former and new participants.

Most of the contact that will be made to participants will be through e-mails to gather the information required. If an e-mail is not available, Facebook will be used to establish communication (since former students have become Facebook friends with instructor once the program was completed). Once initial contact has been established, if any other communication outlets (Skype, blogs, Google Docs/Drive, etc) are required to continue communication then they will be pursued. Lastly, I foresee the use of phone calls to also be required to gain the support from the participants.

Generation of Ideas

In order to generate ideas for the training content to be used in this course, various methods were used to obtain information on needs.

*Observations*

The planner for this course has participated in the Able Flight program for three years and has been able to witness how the ground course is run and taught. Through these observations, she has marked the material and the level of quantity that needs to be taught. Also through this method, resources that previous instructors have used to teach the course are able to be marked. These resources include the Sport Pilot GLEIM, the FAR/AIM, the Pilot’s Handbook of Aeronautical Knowledge, etc. Lastly, observations of the types of activities that work and engage the participants and those that don’t are marked, which will help when creating class activities or homework assignments.

*Interviews*

By conducting interviews with graduates from the program, flight instructors, and previous ground instructors, data has been gathered on what material is expected to be taught on the ground course. Graduates of the program, since they have taken the FAA exam, are able to give opinions on the material that is to be taught and which requires more attention. Also, the instructors give ideas various activities that could be used, how the material can be taught, and provide resources.

*Documents and Artifacts*

The FAA provides resources and guidance for pilots as they’re training or working. These materials are free and available to everyone through the FAA’s website. Guidance documents aid instructors in the planning of courses, material to be covered, and performance standards. These documents range from training manuals, practical test standards/airmen certification standards, flying/training handbooks, advisory circulars, and many others. Using these materials to determine what the FAA expects on pilots, specifically sport pilots (as that is the eventual outcome of participants in the ground course), the planner is able to start to create ideas on what should be included in the course.

*Informal Interactions with Colleagues, Friends, Family, and Acquaintances*

Being a pilot and flight instructor, the planner is able to meet with other aviation professionals that have at one point or another taught some type of ground course, whether one-on-one or in a group lecture. These individuals can provide feedback on ideas the planner has and whether it meets the program’s objectives. Additionally, these informal conversations could lead the planner to meet other individuals that may provide resources, content ideas, review of program, etc. that could aid in the creation of course.

Once ideas have been set, the selection and priority of them is done based on various criteria. The first criterion is whether the content will provide the knowledge necessary for the participants to be successful in final FAA exam. By using FAA resources on Sport Pilot written exams and the GLEIM book, the planner is able to determine which content is needed in the course. The second criterion is the level of knowledge the participants will need. The participants in the course will become sport pilots, which require a different knowledge base than private pilots, ATP pilots, or commercial pilots, to name a few. Therefore, this criterion helps the course not be loaded with content that is irrelevant. The third criterion is the possible redundancy of content taught. Since participants will also be taking a flight course, there is the possibility that material taught in the flight course will also be taught in the ground course. Therefore, determining what content will not be redundant, but rather necessary to aid in understanding (as repetition of material is helpful for retention), is critical to ensure participants stay engaged and motivated to learn.

**Alternative Solutions**

For this program, training is the main way to meet the program’s objectives and the organization’s mission. As can be seen in the learner analysis earlier in this packet, most participants come with either no knowledge or some basic knowledge of aviation. Also, since the end goal of the ground course is to take an exam, there are only two avenues to study, self-directed or in a course. Thus, providing a training course to help participants understand the material on the exam and to provide opportunities to study with others and ask questions, is the best course of action.

**Training Content Outline**

The training module created for this training project will include material needed to pass the FAA written exam. Therefore, various topics will be taught in the course. Due to the multitude of information that will be presented to participants, a general outline of the material, in the order that it’s expected to be taught, is given.

*Able Flight Ground Course – General Outline*

1. Introduction to Course
2. Airplane Controls, instruments, and aerodynamics
3. Airport Operations
4. Airspace and Sectional Charts
5. Aeronautical Decision Making
6. Weather Theory
7. Weather Services
8. Performance and W&B
9. Navigation and Preflight Operations
10. FARs
11. Aeromedical Factors
12. Airplane Systems
13. Final Test

Program Goals and Instructional Plans

**Program Goal**

The goal of this course is to teach to Able Flight participants the material and knowledge necessary to pass the FAA’s Sport Pilot Knowledge Exam.

**Program Objectives**

There are two program objectives for this course. They are:

1. At the end of this course, students will pass the Sport Pilot Knowledge Exam with an 80% or higher.
2. Students will be able to apply the knowledge in this course into their flying to improve performance.

(Durán, 2015)

**Learner Objectives**

Learner objectives for all the sessions to be covered in the course are found at the top of each session’s outline.

**Instructional Plan**

The instructional plan for this course is designed as a syllabus for the course. From the syllabus, session outlines are created to detail the material to be covered in that session. Additionally, learner objectives, class activities, and assignments are detailed in the session outlines. The syllabus for the course is found after the Instructional Resources section and the session outlines are located in Appendix 1.

**Assessment Plan**

Since the ground course is not for a given grade, any homework assignments will not be graded. Instead homework assignments will be used to assess the students’ knowledge level in the material covered by each session (Durán, 2015). Furthermore, class activities, including discussions, presentations, group projects, etc., will be used to determine if the students have understood and can apply the knowledge taught in the course. For specific class activities to be used in each session, refer to the session outlines.

At the end of the course, there will be a final assessment (final exam) that will be graded. The reason for this test and the grade, is to ensure that each student is prepared to take the FAA’s knowledge exam. Once passing this final assessment, the students will be given an endorsement that is required to take the FAA’s knowledge test (Durán, 2015).

**Instructional Resources**

The resources for both the instructor and the students will be found at the Able Flight’s Course Sites page. In order to access the page, the instructor will be given access by the course designer, the students will need to create a free account with Course Sites. This site is the free version of Blackboard that Purdue University uses. The only resources that aren’t available on this site are the session outlines. These outlines will be given to the instructor prior to the beginning of the course via electronic format, i.e. email, Google drive, so that any comments and changes can be easily made by the instructor. The table below shows the resources that are available to students and instructor and where they will be available.

|  |  |  |
| --- | --- | --- |
| **Resources** | **Available To:** | **Location** |
| Pilot’s Handbook of Aeronautical Knowledge | Students and Instructor | Course Sites  FAA website |
| Aircraft’s POH | Students and Instructor | Course Sites |
| GLEIM Sport Pilot Textbook | Students and Instructor | Instructor – Prior to teaching course  Students – Given out first day of course |
| Aeronautical Information Manual | Students and Instructor | Course Sites |
| Airplane Flying Handbook | Students and Instructor | Course Sites |
| Practical Test Standards – Sport Pilot | Students and Instructor | Course Sites |
| FARs | Students and Instructor | FAA website |
| Session PowerPoints | Students and Instructor | Course Sites |
| Videos used in Session(s) | Students and Instructor | Instructor – session outlines  Students – Course Sites once they have been shown in class |
| Figures used in Session(s) | Students and Instructor | GLEIM Book |
| Airport Signs Quick Reference Guide | Students and Instructor | Course Sites |
| Course Syllabus | Students and Instructor | Course Sites |
| Session Outlines | Instructor | Via electronic format prior to beginning of course |
| Final Test | Instructor | Via electronic format prior to beginning of course |
| Materials needed for class activities. i.e. notecards, case studies, plotter, sectional charts, colored paper, etc. | Students and Instructor | Instructor – provided or uses his/her own  Students – provided in class or use their own |
| Sectional Charts | Student and Instructor | Given out first day of course |

**Course Syllabus**

|  |  |  |
| --- | --- | --- |
| 5/23/2017: Session I | Introduction to Course | **Readings***:*  GLEIM Section 12 and 11  **Video:**  The Four Forces |
| **Optional Readings:**  PHAK Chapter 4 pg. 4-5 – 4-9  PHAK Chapter 5 to page 5-38  AIM Chapter 2 |
| 5/24/2017: Session II | Airplane Controls, instruments, and Aerodynamics | **Readings:**  GLEIM Section 1  Airport Signs Quick Reference Guide |
| **Optional Readings:**  PHAK Chapter 14  AIM Chapter 4 Section 3 |
| 5/25/2017: Session III | Airport Operations | **Readings:**  GLEIM Section 2 and 9  PHAK Chapter 15 |
| **Optional Readings:**  AIM Chapter 3 |
| **Assignment:** Group Project 1  Due Date: Thurs. 6/1/2017 |
| 5/26/2017: Session IV | Airspace and Sectional Charts | **Readings***:*  PHAK Chapter 2 |
| 5/29/2017: Session V | Aeronautical Decision Making | **Readings:**  GLEIM Section 7 and 8  **Video:**  AOPA Weather Wise Video |
| **Optional Readings:**  AIM Chapter 7  PHAK Chapter 12  Weather Services Book |
| 5/30/2017: Session VI | Weather Theory | **Optional Readings:**  Assigned last session |
| 5/31/207:  Session VII | Weather Services | **Readings:**  GLEIM Section 14  PHAK Chapters 10 and 11 |
| **Assignment:** PIREP  Due Date: Friday 6/2/2017 |
| 6/1/2017 | PRESENTATIONS!! | **Readings:** Assigned last time |
| 6/2/2017:  Session VIII | Performance and W&B | **Readings:**  GLEIM Section 10 |
| **Assignment:** W&B and Performance Data  Due Date: Mon. 6/5/2017 |
| 6/5/2017:  Session IX | Navigation and Preflight Operations | **Readings:**  GLEIM Section 3, 4, and 5  faa.gov website - FARs |
| **Assignment:** Incident/Accident Report on Aeromedical Factor  Due Date: Wed. 6/7/2017 |
| 6/6/2017:  Session X | FARs | **Readings:**  GLEIM Section 6  AIM Chapter 8 |
| 6/7/2017:  Session XI | Aeromedical Factors | **Readings:**  GLEIM Section 13  PHAK Chapter 7 |
| 6/8/2017:  Session XII | Airplane Systems | **STUDY FOR TEST!!** |
| 6/9/2017 | Review Session for Exam | **STUDY FOR TEST!!** |
| 6/12/2017: Session XIII | Final Test |  |

(Durán, 2015).

**Session Outlines**

The session outlines for each session are found in Appendix 1.

Module of Instruction

One delivery method to be used in the course is through PowerPoint presentation with class discussion and activities. Session VII uses this delivery method to explain weather services to the students. The PowerPoint presentation to be used in this session can be found in the attached PowerPoint slides. For more details on the session, refer to the session outline found in Appendix 1.

Barriers and Strategies for Transfer of Learning

**Barriers to Transfer of Learning**

The knowledge the participants acquire in the course is expected to be applied during their flight training and afterward. The knowledge taught in the course is the base knowledge a sport pilot must have to properly exercise the privileges of their pilot certificate without barking any FARs and to fly their plane safely. The barriers that could inhibit the transfer of learning are as follows.

Due to the accelerated pace of the program, the learners could feel overwhelmed by the information given to them. This could potentially lead the learners to have random information that hasn’t had the time to be properly processed to make connections to other material of their flying. Additionally, since both the ground and flight portions of the program are occurring at the same time, a topic that is to be addressed in the ground course may have already been experienced or taught by the flight instructor in a previous flight lesson. This could hinder any new information taught in the ground school as the student may believe they already know the information and not pay attention during the ground course (or vice versa).

Another barrier could be fatigue. Since the program is accelerated and students are expected to fly at least twice a day and attend a ground course, the time available outside of “school” is minimal. Although the participants are here only for the program, there are still aspects of their personal life that take time (routines, work, family, etc.). Therefore, having time to prepare for a flight and ground course will take time that could potentially cause late nights. Also, a high workload could demotivate the participants from doing their best work/performance and instead settle for meeting the minimum requirements, in interest of time.

The ground instructor can inhibit transfer of learning if he/she doesn’t properly explain how the information being taught is applied outside the class. The instructor must explain how the information in the course is to be used (aside from taking an exam) and how it can help them when flying an airplane. If this is not established from the very beginning of the course, the students may just take the information and study it to pass an exam and nothing more.

**Strategies for Transfer of Learning**

|  |  |  |  |
| --- | --- | --- | --- |
| **People Involved** | **Before the Program** | **During the Program** | **After the Program** |
| *Program Planners* | * Create a learner analysis to understand learner motivations, expectations, learning styles, etc. * Plan and create delivery methods that will match the variety of students in the course. * Create a set of objectives that will aid in the application of material. | * Receive feedback form instructor and learners if course was effective or not. * Provide information to instructor if he/she is confused on a facet of the course or answer any questions. | * Evaluate the course to determine if the objectives were met. * Receive feedback from instructor and students on the effectiveness of course and how it could be changed. * Change the course as necessary to ensure the objectives are met. |
| *Instructor(s)* | * Provide feedback to program planner on the activities planned for the course to ensure they will be effective for the material to be taught. * Ensure they have the skills and qualifications to properly and effectively teach the course. | * Adjust the syllabus as necessary so every student meets the learning objectives. * Explain to the students how the information can be used outside the classroom and why it’s important. * Engage the students in the class activities. * Provide availability outside of class for one-on-one training or answering of questions. | * Receive feedback from students on their teaching performance and make changes as necessary. * Provide feedback to program planners on what aspects of course need to be changed or adjusted. * Provide availability to students in case they have questions as they continue in their flying outside the course. |
| *Learners* | NA | * Actively participate in class activities and ask questions. * Apply the knowledge acquired into their flight training. * Take time outside of class to study material and come with questions to class. | * Provide feedback on the course and instructor on effectiveness, applicability, enjoyment, etc. * Keep a network of instructor(s) and other students so can reach out as necessary when doing flying outside the program. |
| *Supervisors* | NA | NA | NA |
| *Stakeholder(s)*  *Charles Stites, Bernie Wulle* | * Provide feedback to program planner on whether course meets the objectives. * Ensure funding is available for the course and materials requested are considered. * Provide information on students’ disabilities and contact information. | * Be available to instructor or program planner in case resources are requested or problems arise with the course. * Provide encouragement to instructor(s) and/or students. * Recognize student achievements as they occur. | * Provide feedback to program planner on course effectiveness and whether objectives were met. * Recognize student and instructor achievements (usually through ceremony at Oshkosh). |

Evaluation

**Course Evaluation**

The course was created with the Goal Orientation Theory of Motivation in mind. This theory assures that every session created for the course meets certain requirements to ensure that students will create mastery goals that will aid in learning and retention of material. The assessment tool will aid the course designer to identify any areas that may not meet the requirement set forth by the theory and adjust as necessary. The assessment tool is to be used during the various phases of design, development, and implementation of the course. This method will allow the course to be changed prior and after presentation to potentially increase the chances of improving the course. This assessment tool will ask the course designer to evaluate such facets as time management, diversity of activities, student choice in course activities/deadlines, difficulty of tasks/activities, instructor’s feedback system, etc. For more details look at the tool in the attached excel sheet.

To receive more feedback from the course after its implementation, a course evaluation will be given to the participants of the training course. Two evaluations will be given to the participants to receive feedback on course time allotment, instructor teaching methods, feedback system, etc. The first survey will be given half way through the course to determine students’ perceptions on how the course is progressing, if it’s meeting expectations, congruent with course goals, and teaching methods. This evaluation will be a short 5 question survey to get feedback to the instructor and course designer. The second evaluation will be given at the end of the course to receive more feedback on the course. This second summative evaluation will ask participants to answer questions dealing with course objectives, changes participants would like, instructor’s teaching abilities, etc. Sample survey questions can be found after the Techniques for Evaluation section.

**Instructor Evaluation**

As mentioned in the last section, Course Evaluation, the instructor will be evaluated by the course designer and the participants of the course. The feedback received from both evaluations will aid the program to determine/change hiring criteria for the instructor, provide the instructor feedback on his/her teaching methods, strengths and weaknesses, professionalism, etc. The evaluations once again will be done three times, once by the course designer and twice by the participants in the course.

**Student Evaluation**

The participants in the course will also be evaluated to ensure performance of the material. The students will be evaluated throughout the course with short pop quizzes administered orally or through an online format. These evaluations will provide feedback to instructor on pace of course, struggling areas and/or students, and student progress. The students will also be evaluated at the end of the course by a final exam that will determine if their performance meets the requirements to receive an endorsement from instructor to take the FAA Sport Pilot Exam.

**Techniques for Evaluation**

The main technique that will be used in evaluation of the course and instructor will be through surveys. This technique is quick and will give immediate feedback to either course designer or instructor on student perceptions. The immediate feedback is needed if changes are to occur during the duration of the course since it’s only a five-week course. Additionally, if participants would like to give more detail on the evaluations, or felt not enough time was given to provide feedback, interviews could also be done. The interviews could be done by the course designer, the instructor, or if the student would like to give feedback on the instructor another stakeholder in the program, i.e. Wes or Bernie. The interviews would be able to provide with more qualitative data that’ll be more detailed and could provide more insight into student’s performance and perceptions.

Lastly, the course could benefit from observations by the course designer or other stakeholders. The observations would occur during a session (or sessions) of the course and will be used to provide feedback to instructor and course designer. The observations could be useful in determining which activities students were engaged in and which not, provide feedback to instructor teaching and engagement, and general course details.

**Sample of Summative Survey**

The following page(s) include a sample of the summative survey that will be given to participants at the end of the course. Not all questions on the survey are shown.

**Able Flight Ground – End of Course Evaluation**

The following questions ask about the course in general. Please rank each statement in the scale with (1) Strongly Disagree, (2) Disagree, (3) Neutral, (4) Agree, and (5) Strongly Agree.

1. The course objectives and purpose were stated clearly.
2. (2) (3) (4) (5)

1. The course expectations (homework assignments, reading requirements, etc.) were too much workload for the course.
2. (2) (3) (4) (5)
3. The course materials were relevant to the course material.
4. (2) (3) (4) (5)
5. The course materials (reference books, videos, syllabus, etc) were easily accessible.

(1) (2) (3) (4) (5)

1. The course activities were interacting, fun, and helpful in learning.

(1) (2) (3) (4) (5)

The following questions ask to rate the instructor. Please rank each statement in the scale with (1) Strongly Disagree, (2) Disagree, (3) Neutral, (4) Agree, and (5) Strongly Agree.

1. The instructor clearly stated the course objectives and expectations.

(1) (2) (3) (4) (5)

1. The instructor was prepared for each session and was effective in running the session.
2. (2) (3) (4) (5)
3. The instructor was knowledgeable on the material presented in the course.
4. (2) (3) (4) (5)
5. The instructor could adjust the session’s activities and presentation of material to match students’ struggles and/or confusions.
6. (2) (3) (4) (5)

The following questions ask your opinions on aspects that may be need to changed/improved. Please answer with as much detail as possible.

1. What aspects of the course were enjoyable to you? (Please provide specific examples).
2. What aspects of the instructor would you like to have changed to improve the learning experience? (Please provide specific examples and possible solutions)
3. What aspects of the course do you believe should be provided to you prior to participating in the course?
4. Do you have any other comments on the course or instructor?

Course Format, Schedule, and Instructors

**Course Format**

For this course, there are various formats that will aid the students in learning the material. The course will be taught in a class format to allow for dissemination of material. Since the majority of students will not have any prior knowledge of the material prior to participating in the course, the class format will allow for a central location of learning. The students will know that at a certain time and place, they will be able to meet with their peers, ask questions to the instructor, work together to solve problems and answer questions. Also, since participants are familiar with the class format, from high school, college, etc., this type of setting will feel somewhat familiar and reduce anxiety or stress over the course.

In addition to the class format, the course will use mentoring. The instructor teaching the course, the students flight instructors, and various stakeholders in the program will be able to become mentors. These individuals are knowledgeable on the material being covered in the course, understand the program’s goals and objectives, understand students’ perspectives (some stakeholders are previous students), and are available and reachable at mostly any time. With this format, the students will be able to have someone they can rely on to help them or to provide feedback on the course, their progress, and/or their opportunities in aviation.

Lastly, residential learning will be a format that will be used in the course. All of the participants in the course will be staying in one location, First Street Towers, for the duration of the program. By staying in one location, the students will have the opportunity to interact with one another both academically and socially. Such interactions will make students feel part of a community and feel comfortable with everyone, therefore increasing chances of group study, reducing homesickness, and reducing anxiety about the course.

**Course Schedule**

The course consists of thirteen sessions that cover the various topics that students will need to know to take the FAA’s Knowledge Exam. These sessions occur Monday through Friday and run for two hours. The course syllabus shows what topic will be taught in each session. Additionally, detailed session outlines provide the specific material to be covered for each topic as well as the class activities for that session. Both the course syllabus and session outlines are found earlier in this packet.

From looking at these documents, one can see that there are no specific details on how long the instructor must cover a topic, except that he/she has two hours a day. The only detailed instances of time are with the class activities to ensure an activity doesn’t run forever. The reason for not giving specific time requirements (minute by minute outlines) for each session is feasibility and flexibility. The material to be covered in each session can be presented in a manner of ways and the session outlines provide just one way that they could be covered. Therefore, the instructor can have the opportunity to change the presentation method to meet the students’ needs.

Also, to provide a minute by minute outline of the material is not only time consuming for the course designer, as these outlines would have to be done for each of the thirteen sessions, but also having such restrictions are not conducive to student learning. The instructor must have the flexibility to adjust the pace of the course and the amount of time spent on one topic in accordance with students’ competencies. Lastly, having such detailed time requirements for each session can create anxiety in the instructor as he/she may feel pressure to cover the material only in the time provided and the instructor may feel restrained in teaching the course. These feelings can not only affect the teaching methods of the instructor, but can also hinder creativity and enthusiasm from the instructor.

**Staff/Instructors**

The program and instructional staff for this program will be internal to the University. The program managers, designers, coordinators, and instructors will be individuals that are familiar with the program and that are affiliated with Purdue University. The following table shows these positions and the individual(s) that will be in those positions.

|  |  |  |
| --- | --- | --- |
| **Position** | **Individual** | **Description** |
| Program Planner | Lucero Durán Trinidad | This position creates the material required by the instructor to properly teach the course. Also, he/she may evaluate the course before, during, and after termination of the course. Lastly, this person will ensure that any electronic formats are working properly and available to students and instructor(s). |
| Instructional Staff Member(s) | Certified Flight Instructor  (or certified ground instructor – AGI, IGI) | This individual will be the primary teacher in the ground course.  *Although the program may use an instructor from Purdue, it could hire an external individual to teach the course. This is only done in instances that Purdue is not able to provide an instructor.* |
| Program Evaluator | Program Planner and Program Stakeholder(s) | These individuals will evaluate the course before, during, and after to ensure that:   * Met course objectives and goals * Provides recommendations for changes/updates in the course * Changes/updates criteria for instructional staff   These individuals will accomplish the evaluation through observations, surveys, and an evaluation tool. |
| Program Coordinator(s) | Lucero Durán Trinidad  Wesley Major  Bernie Wulle | These individuals will ensure that materials needed for the instructor and students are available, room is reserved, students’ needs are met, communicate with Able Flight Organization, meet with instructor(s), etc. |

Budget and Marketing Plan

**Budget**

Refer to excel sheet (attached) for the incomes and expenses incurred in this program.

**Marketing**

The promotion of this training program is done yearly by the Able Flight organization. The various marketing tactics that are currently used by the organization are included in the following table.

|  |  |  |
| --- | --- | --- |
| **Tactic** | **Target Audience** | **Purpose** |
| Able Flight Website:   * About Us page * Testimonials from previous program participants * Videos of previous participants – flying or interviews * Sponsors * Contact information | Sponsors and Future Participants | Primary method for marketing program by having easy access to the organization’s and program’s description, past sponsors, and testimonials. |
| Able Flight Banquet | Sponsors | The banquet hosts various sponsors as well past and current students to the program. The primary purpose of the banquet is to raise money, but it also acts as marketing as it helps spread the word about the organization. |
| Social Media – Facebook | Future Participants | Past participants have created a Facebook page for the program that helps draw the attention of other individuals who may want to learn about the program. |
| Presentations at Aviation Events  (Oshkosh, Sun ‘n Fun, etc.) | Sponsors and Future Participants | At this aviation events the organization is able to spread the word about the program to gain more sponsors and individuals interested in participating in the program. |
| News Stories | Future Participants | Occasionally you will see a news story covering a past participant of the program. By having the news story, with a mention to Able Flight, spreads the word about the program and helps to show what participants lives change after participating in program. |
| Word of Mouth | Sponsors and Future Participants | Past students, instructors, sponsors help spread the organization’s goals, mission, and program to others who may be interested in being a part of it. |

Facility Requirements and Seating Arrangements

Facility Requirements

The following checklist was used to evaluate the facility that is needed for this program.

Checklist for Selecting Facilities

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Items | | | | | Notes | | |
| Availability of program dates | | | | | |  | | |
| \_\_\_ | | First choice | | \_\_NISW ROOM 184\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | |
| \_\_\_ | | Second choice | | \_\_NISW ROOM 187\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | |
| \_\_\_ | | Other | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | |
| Location | | | | | | |  | |
| \_\_\_ | | Good transportation access (for example, plane, car, ground transportation) | | | | | | easily accessible from campus\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| \_\_\_ | | Participant appeal | | | | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| \_\_\_ | | Safe and secure (for example, lighting, security staff) | | | | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| \_\_\_ | | Ease of parking | | | | | | would need to verify that all handicap parking spots are available\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Meeting rooms: General sessions, break-out rooms, social and entertainment areas  (See Exhibit 14.C for a description of each of these features.) | | | | | | | | |
| \_\_\_ | | Size | | | Chairs can be removed and tables moved around to accommodate wheelchairs\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | |
| \_\_\_ | | Appearance | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | |
| \_\_\_ | | Lighting | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | |
| \_\_\_ | | Décor | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | |
| \_\_\_ | | Furnishings | | | Chairs can be removed and tables moved around to accommodate wheelchairs\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | |
| \_\_\_ | | Ventilation, heating, and cooling | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | |
| \_\_\_ | | Sound projection | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | |
| \_\_\_ | | Electrical outlets | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | |
| \_\_\_ | | WiFi | | | Students will not have access to wifi as they won’t have a Purdue account. May use log in from instructor if needed. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | |
| Support services (at same or different facility where program will be held) | | | | | | | | |
| \_\_\_ | | On-site meals (catered by same or different group) | | | Meals will be provided separately from NISW – through dinning courts. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | |
| \_\_\_ | | Accommodations | | | Students will be staying at 1st Street towers.\_\_ | | | |
| \_\_\_ | | Restaurants | | | \_NA\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | |
| \_\_\_ | | Recreation, fitness facilities | | | Will have access to Co-Rec facilities\_\_\_\_\_\_\_\_\_ | | | |
| \_\_\_ | | Phones, fax, and Internet access | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | |
| \_\_\_ | | Business center | | | \_\_NA\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | |
| \_\_\_ | | Equipment services | | | \_NA\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | |
| On-site transportation (frequency, convenience, cost) | | | | | | | | |
| \_\_\_ | | Public | \_May receive rides from other students or instructors\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | |
| \_\_\_ | | Private | \_Some will have their own car\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | |
| Accessibility requirements under Americans with Disabilities Act (ADA) | | | | | | | | |
| \_\_\_ | | Accessible parking spaces | | | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
| \_\_\_ | | Ramps, lifts | | | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
| \_\_\_ | | Elevators | | | | | \_No need to go to a second floor at NISW\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
| \_\_\_ | | Accessible sleeping rooms | | | | | \_NA\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
| \_\_\_ | | Accessible public restrooms | | | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
| \_\_\_ | | Doorway and corridor width for wheelchairs | | | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
| \_\_\_ | | Floor surfaces smooth and firm | | | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
| \_\_\_ | | Lowered public telephones | | | | | \_NA\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
| \_\_\_ | | Telecommunications device for deaf (TDD) | | | | | Will work on that – Raymart will help\_ | |
| \_\_\_ | | Readable signs with large lettering, Braille, or raised symbols | | | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
| \_\_\_ | | Sufficient lighting in rooms and corridors | | | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
| \_\_\_ | | Emergency warnings in multiple delivery methods | | | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
| General factors | | | | | | |  | |
| \_\_\_ | | Attractions and entertainment in area | | | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
| \_\_\_ | | Experience in hosting educational programs | | | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
| \_\_\_ | | Site personnel | | | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
| \_\_\_ | | Safety issues | | | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
| \_\_\_ | | Medical and emergency services | | | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |

**Seating Arrangements**

Most of the methods that will be used to teach the material in this course will be through class activities, PowerPoint presentations, discussions, and group presentations. For each method of delivery, a seating arrangement can be done to maximize participation. Below is a table describing the seating arrangement for each delivery method.

|  |  |  |
| --- | --- | --- |
| **Delivery Method** | **Seating Arrangement** | **Reasons** |
| PowerPoint Presentations | U-Shape | Since there are only seven students in the class, the class would be easily changed to fit in a U-shape configuration. This way each member will be able to see the presentation properly and be able to communicate with everyone in the class. |
| Class Discussions | Conference Table(s) | By re-arranging the tables to be set up like conference tables, every member in the class will be able to see one another and be able to communicate with each other. Additionally, since discussion is the main point of the session, this seating arrangement reduces the importance of the instructor, and everyone can feel comfortable sharing their ideas/opinions. |
| Class Activities | Traditional Classroom | Since the classroom is set up like a traditional classroom, it provides the seven students to break into three groups that will be able to move around to a different table to work as a group. The room is big enough to allow for such conditions. |
| Group Presentations | U-Shape or traditional classroom | Since there are only seven students and the classroom can fit up to 30, there is enough room for them to sit and not be blocked by another student. They would also be able to communicate with one another as they are near to one another. The same can be said if placed in a U-shape seating arrangement. |

Project Summary

This project plan was created using various theories and methods of training programs, most specifically the Interactive Model of Program Planning proposed by Caffarella and Daffron (2013). By incorporating each step from the model the program designer created a plan that covered the administrative parts of the program and the design and development of the course. By planning the budget, the power structure, the analysis of students, environment, resources available, the mission statement(s) of the organization, and the marking plan, any ambiguities on the course of action for implementation of the program are reduced. Also, with these administrative tasks on paper an ease of transition will be created as the administrative position changes in the program.

The project plan also incorporates the elements created in the design and development of the course. The elements include the course syllabus, detailed session outlines, session PowerPoint presentations, class activities, etc. Most of the development phase materials are found in the Course Sites platform created for the course as well as in this packet. The creation of these materials, with learner objectives, allow the instructor/course designer to ensure that the program objectives are met. Additionally, by using the Goal Theory of Motivation the structure of each session was created to ensure that each student can create intrinsic goals that will lead to higher performance levels and mastery of the material.

Finally, to ensure that the course is effective and meets the program goals, evaluations of the course were created. The first evaluation is to be used by the course designer to ensure that the course was designed and developed in accordance with the organization’s mission statement, goals, and has meet the program and learner goals crafted in each session. Furthermore, evaluations were created to give to the participants of the course to get feedback on the course, the instructor, and the delivery method of the material being taught. The goal of these evaluations is to receive feedback that can help in re-designing or adjusting the course to ensure that each participant leaves the program satisfied and with the material learned.

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Appendix 1:

Session Outlines

**Session I: Introduction**

(Durán, 2016)

**Objectives**

At the conclusion of this session the students will be able to:

1. Identify the expectations for this course.
2. Name the course objectives.
3. Locate the materials needed for this course in the Course Sites website.
4. Plan their day accordingly to match the expectations for the ground and flight courses.

**Agenda**

1. Brief introduction of instructor
2. Identify student motivation(s)/goal(s)
   1. Give students index card and ask to write following things down:
      1. Name
      2. Where is home
      3. What they expect to do with their knowledge and license
      4. A specific goal they expect to accomplish in this course
   2. As writing down – talk about reason for index card
      1. Goal theory of motivation
3. Day to Day Operations
   1. Fly – Lunch – Ground – Fly
   2. Flight Course:
      1. Paired with instructor for whole time of course
         1. If have questions – contact me
      2. Airport
         1. Parking permits
         2. Need ride?
      3. Schedule
         1. Pick time in morning and evening that works for you and instructor
         2. Google Doc – instructors will fill out so know when plane is available
      4. Contact Info
         1. Verify
         2. Give out to everyone
   3. Lunch:
      1. Need the ID given to you (to get in residence hall)
      2. One meal per day – the rest on your own
      3. Dining courts – online can figure out which are open
      4. Wes can help out getting there
   4. Ground:
      1. Every day M-F
      2. 1:30-3:30 pm
      3. NISW (Room # TBD)
      4. Pass out GLEIM book to every student
4. Expectations
   1. Explain through syllabus (hand out)
   2. Explain homework assignments
5. Course Sites
   1. Ensure that all students have created an account and have access to site
   2. Place where materials, readings, videos will be located
   3. Brief tutorial on how site works

**Session II: Airplane Controls, Instruments, and Aerodynamics**

(Durán, 2016)

**Objectives**

At the conclusion of this session the students will be able to:

1. Differentiate between primary and secondary flight controls.
2. Describe how the flight controls are used in flight to control aircraft.
3. Explain the forces acting on an airplane during all phases of flight.
4. Identify and describe how the aircraft basic 6-pack instruments work.

**Homework Assignments**

Students required to have:

1. Read GLEIM Section 12 and 11
2. Watch Video: The Four Forces

**Agenda**

*Airplane Controls and Aerodynamics*

1. Using chalkboard
   1. Explanation of primary and secondary controls
   2. Definitions for:
      1. Airfoil
      2. Camber
      3. Chord Line
      4. Relative Wind
      5. Angle of Attack
   3. Axis of Flight
   4. Stability
      1. Static vs Dynamic
2. 4 Forces of Flight - Discussion
   1. Lift
      1. What is lift?
      2. Lift Equation
      3. Video <https://www.youtube.com/watch?v=aFO4PBolwFg>
   2. Drag
      1. What is it?
      2. Parasite vs. Induced
      3. Video <https://www.youtube.com/watch?v=2YDKCAkigBs>
      4. Wake Turbulence
   3. Thrust
      1. What provides thrust?
   4. Weight
      1. CG definition
      2. Effects
3. Load Factors – using Doc Cam
   1. Diagrams from GLEIM (pgs. 267-268)
4. Stalls
   1. Video: <https://www.youtube.com/watch?v=WFcW5-1NP60>
5. Activity: In groups (divided equally)
   1. Based on the principles we just learned how does an airplane…
      1. Climb?
      2. Descend?
      3. Turn?
   2. Will present theories to class (with corrections from instructor)
   3. Give about 15 mins for each group to come up with theories

*Airplane Instruments*

With PowerPoint:

1. Basic 6 Pack
2. Pitot/Static System
3. Gyros
4. Magnetic Compass
5. Glass Cockpits

**Session III: Airport Operations**

(Durán, 2016)

**Objectives**

At the conclusion of this session the students will be able to:

1. Recognize and interpret the various markings and signs located at an airport.
2. Identify the different lights at an airport.
3. Interpret the VASI/PAPI lights in order to use them when coming in to land.
4. Describe runway incursions and explain how they can be avoided.
5. Identify instances of potential collision hazards.
6. Explain how to avoid collision hazards.

**Homework Assignments**

Students required to have:

1. Read
   1. GLEIM section 1
   2. Quick Reference Guide

**Agenda**

With PowerPoint:

1. Airport Markings and Signs
2. Airport Lights
3. Airport Diagram (Hand out for Lafayette)
4. Traffic Patterns
   1. Standard vs. Marked
   2. How to determine which RWY and Pattern
   3. Activity: as a class
      1. Provide different scenarios and figure out which runway and pattern entry to do
5. Airport Frequencies
   1. Ground
   2. Tower
   3. Approach/Departure
6. Runway Incursions
   1. <https://www.youtube.com/watch?v=3zBdtNVa8N0>
7. Collision Avoidance
   1. Aircraft Lights
   2. Right of Way Rules
8. Assign Group Project 1
   1. Pass out project description
   2. Deadline: Give them at least rest of week and weekend to finish project. Present on Monday of the following week after giving project.

**Session IV: Airspace and Sectional Charts**

(Durán, 2016)

**Objectives**

At the conclusion of this session the students will be able to:

1. Match the different types of airspaces, i.e. controlled, uncontrolled, and special use, with their corresponding symbol(s) on the sectional chart.
2. Describes the requirements needed to fly in each type of airspace.
3. Interpret and use the symbols on the sectional chart and use the legend if necessary.
4. Locate position and/or landmarks based on latitude and longitude coordinates on the sectional chart.

**Homework Assignments**

Students required to have:

1. Read
   1. GLEIM section 2 and 9
   2. PHAK Chapter 15

**Agenda**

1. A-G Airspace
   1. Using sectionals (students should have one) as a class have students find examples of all classes of airspace
   2. In colored papers (give to students):
      1. While discussing the students write on these colored papers the classes’:
         1. Dimensions
         2. Entry Requirements
         3. Weather Requirements
         4. Depiction in Sectional Charts
      2. Colored Papers will match the colors of the airspace depictions on the sectional charts
   3. As discuss the various airspaces – mention the symbols on sectional including:
      1. Airspace altitudes
      2. Airport information
   4. Ensure that with Doc Cam have your own sectional to help point out airspace and symbols
   5. Also start to use latitude and longitude when locating airspaces.
2. Special Use Airspace (SUA)
   1. Activity: in Pairs
      1. Each pair will get two special use airspace. Using PHAK, GLEIM, internet, etc., each pair will prepare a short presentation to teach the airspaces to the class.
      2. Criteria for presentation:
         1. Description of Airspace
         2. Requirements for entry
         3. Depiction in sectional chart (if applicable)
      3. Pairs will get 20 mins to work
      4. SUA will only be the special emphasis areas on PTS
         1. Prohibited
         2. Restricted
         3. MOAs
         4. Alert
         5. Warning
         6. Controlled Firing
         7. TFRs
   2. As students present – aid with any information, or correct mistakes to ensure students get all the correct information

**Session V: Aeronautical Decision Making**

(Durán, 2016)

**Objectives**

At the conclusion of this session the students will be able to:

1. Summarize the definition of Aeronautical Decision Making (ADM) and why it’s important in the aviation industry.
2. Explain how the various facets of ADM contribute to its definition.
3. Compare the various models of ADM to identify the one that best fits for certain situations.
4. Establish a decision making model that will be used by students during their flying career.

**Homework Assignments**

Students required to have:

1. Read PHAK Chapter 2 - ADM

**Agenda**

1. ADM – Using PowerPoint presentation
   1. What is it?
   2. Why it’s important?
   3. DECIDE Model
   4. Components of ADM
      1. Situational Awareness
      2. Risk Management
         1. PAVE
         2. Hazardous Attitudes
         3. Operational Pitfalls
      3. Task Management
      4. Automation Management
2. Case Study
   1. Pass out accident report
   2. In groups (or pairs)
   3. Have students read the report and analyze it under ADM
      1. Identify aspects that led to the accident and how they fit under an ADM model or component
   4. As a class discuss what students came up with
   5. Case Study: Tenerife Accident, 1977

**Session VI: Weather Theory**

**Objectives**

At the conclusion of this session the students will be able to:

1. Describe the temperature/dew point relationship.
2. Explain the differences between high and low pressure systems and stable/unstable air.
3. Describe how a thunderstorm is created.
4. Identify thunderstorm factors that are dangerous to aircraft and flying.
5. Distinguish between the four different fronts and their associated weather.

**Homework Assignments**

Students required to have:

1. Read GLEIM Section 7 and 8

**Agenda**

With PowerPoint:

1. Explain and discuss the following weather phenomena
   1. Heating and Cooling
      1. Make sure students understand temp/dew point relationship
   2. High and Low pressure systems
      1. Ask students why they think pilots need to know this information
         1. Discuss/explain reason to students
   3. Stable and Unstable air masses
   4. Turbulence and Wind Shear
      1. Show video on PowerPoint slide
   5. Thunderstorms
      1. Students need to understand the theory of thunderstorms
      2. Ask students why they are dangerous to airplanes/flying
   6. Squall Lines
   7. Microbursts
   8. Icing
      1. Ask students what are the dangerous aspects of icing on aircraft
   9. Fronts
      1. Make sure to explain each front – cold, warm, occluded, stationary
      2. Ask students what weather they would expect from each front

After ensuring students understand weather phenomena, can get started with weather services lesson.

**Session VII: Weather Services**

**Objectives**

At the conclusion of this session the students will be able to:

1. Distinguish between all three types of weather briefings and describe how to obtain them.
2. Analyze the weather services provided and make a go/no-go decision.
3. Analyze a METAR to determine if flying conditions exist that day.
4. Use a TAF to determine what weather is forecasted to occur at future departure time or arrival time.
5. Interpret a Pilot Report (PIREP).
6. Describe how to use a Winds Aloft Forecast to determine wind/temperature conditions.
7. Describe the weather phenomena associated with AIRMETs and SIGMETs.
8. Use an Area Forecast to determine expected weather conditions during time of flight.
9. Interpret a Weather Depiction Chart by knowing all the symbols associated with it.
10. Use a Prognostic Chart to determine what weather is expected in the area.

**Agenda**

*With PowerPoint presentation*

1. Explain a process for analyzing weather
   1. Getting a weather brief, getting the big picture, current conditions, and forecasted conditions.
2. Describe the four aspects mentioned in the second slide
   1. The weather brief
      1. Explain the three types of briefs
      2. Discuss how to obtain an “official” weather brief
         1. Call a briefer
         2. Online sources
   2. The Big Picture
      1. Ask why pilots need to get the “big picture” of what the weather is doing?
      2. Using the links on PowerPoint, describe how to read a weather depiction chart and a prognostic chart.
      3. Area Forecasts
         1. Using link on slide, look at an area forecast and go through decoding them.
   3. Current Conditions
      1. METAR
         1. Ask the class:
            1. When are METARs issued?
            2. Do they have to be issued every hour?
         2. Using slide: explain the structure and decoding of the METAR.
         3. Activity:
            1. Divide the class in pairs and give each pair one METAR (color coded).
            2. Also, give handout from Weather Services book that will help with decoding METARs (in case they didn’t do assigned reading).
            3. Give 10-15 mins for each pair to place the METARs in the correct order (structure) and to decode them.
            4. With PowerPoint transitions, ask each pair to decode their METAR to the class.
      2. PIREP
         1. Using slide: go through structure and decoding of a PIREP
   4. Forecasted Conditions
      1. TAFs
         1. Ask the class:
            1. When are TAFs issued?
            2. What are the valid times for TAFs?
         2. Using slide go through how to decode the four types of ‘words’ on TAFs
      2. Winds Aloft
         1. Slide: Explain how to decode them
         2. Ask the class:
            1. Why do some reports don’t report winds? Temperature?
         3. Using other slide: explain how to decode a FB that starts with a 7 (or 8 in some cases).
      3. Hazardous Weather Reports
         1. Divide the class into pairs and give out AIRMET and SIGMET charts to each pair
         2. Starting with AIRMETs and then SIGMETs
         3. Give them about 10 mins for them to fill out their charts and then discuss as a class.
   5. Homework
      1. Assign homework assignment
      2. As you fly you experience weather conditions, so make a report about them. Bring it in – Make sure it’s written in the correct order
      3. Due Date: TBD

**Session VIII: Performance and Weight & Balance**

**Objectives**

At the conclusion of this session the students will be able to:

1. Recall why weight and balance and performance calculations are needed prior to a flight.
2. Demonstrate how to calculate weight and balance using charts and tables.
3. Identify factors that affect aircraft performance.
4. Use a density chart, a crosswind components chart, takeoff and landing data chart, and a cruise performance table.
5. Calculate performance data, specifically takeoff and landing data, from performance charts.

**Homework Assignment**

Students required to have:

1. Read GLEIM Section 14
2. Read PHAK Chapters 10 and 11

**Agenda**

1. Explain the need for determination of Performance and W&B before a flight – FAR 91.103
2. Weight and Balance
   1. Center of Gravity and its limits
      1. CG definition
      2. The reasons for its limits
   2. Examples of incidents due to W&B
      1. <http://lessonslearned.faa.gov/ll_main.cfm?TabID=5&LLID=77&LLTypeID=2>
   3. As a class – using DocCam
      1. *If students don’t have GLEIM book with them – Pass out copies of the Figures to be used*
      2. Go through an example of W&B using Figure 35 (pg. 343)
      3. As go through explain the various terms, including:
         1. Arm
         2. Moment
         3. Datum Line
         4. Empty Weight
      4. At the end – explain why need to total weight and total moment
         1. Determination of CG – Teach the equation
         2. Use Figure 35 to see if CG is within the “envelope”
         3. Need total weight for takeoff and landing charts
   4. Divide into groups of 2
      1. Using Figures 33 and 34 (pg. 349-350)
      2. Give following scenario and ask students to compute a weight and balance and determine if within limits
         1. 2 front seat occupants: 120lbs and 150lbs
         2. 1 rear seat occupant: 130lbs
         3. Fuel Main tank: 40 gallons
         4. Fuel Auxiliary wing tank: 10 gallons
      3. Once everyone is done compare results as a class
3. Performance
   1. *If students don’t have GLEIM book with them – Pass out copies of the Figures to be used*
   2. Factors that affect performance of aircraft
      1. Pressure
      2. Temperature
      3. Humidity
   3. Density Altitude
      1. Explanation of definition
      2. Why it’s dangerous not to know about it and consider it
         1. <https://www.youtube.com/watch?v=ZmEVwyMRYIY> (0:57-1:55)
      3. Use Figure 8 (pg. 329) to do an example as a class
   4. Pressure Altitude
      1. Definition
      2. Teach equation - use current METAR
      3. Need it to use in takeoff and landing charts
   5. Crosswind Components
      1. Using Figure 37 (pg. 320) do an example as a class using following example
         1. Wind: From METAR
         2. Runway to be used: One that favors winds on METAR
      2. Need it to use in takeoff and landing charts
   6. Takeoff Charts
      1. As a class use Figure 41 (pg. 333) using following example:
         1. Temp: 15\*C
         2. Pressure Altitude: From when taught equation
         3. Weight: Total weight from W&B example
         4. Wind component: From previous example
      2. Use the same for landing data
   7. Cruise Performance
      1. Need it to determine TAS, GPH, Fuel Requirements
      2. Use Figure 36 (pg. 319)
      3. Use Example 20 (pg. 335) and 22 (pg. 335)
4. Homework Assignment
   1. W&B and Performance Data
   2. For their specific aircraft and with their instructor
   3. Performance Data for that day (or before) – Takeoff and Landing Data only
   4. Due Date: next session

**Session IX: Navigation and Preflight Action**

**Objectives**

At the conclusion of this session the students will be able to:

1. Explain the factors that affect density altitude.
2. Demonstrate how to plan for a cross country flight using plotter, sectional charts, and flight computer.
3. Describe various types of NOTAMs and identify which apply to them as they plan for cross country flight.
4. Use an Airport/Facility Directory to gather information for their cross country flight.
5. Distinguish and explain dead reckoning and pilotage.
6. Know how the GPS system works to provide navigation to pilots.

**Homework Assignments**

Students required to have:

1. Read GLEIM Section 10
2. Completed W&B and Performance Data

**Agenda**

1. Density Altitude
   1. Since you talked about in last session – just need to further explain it
   2. Factors that affect Density altitude
      1. Explain between high and low density altitude
2. Preflight Action
   1. FAR 91.103
   2. XC Planning – as a class
      1. Materials to use
         1. Using Doc Cam
         2. Chicago Sectional
         3. VFR XC Planning Sheet
         4. Flight computer and Plotter
      2. Plan a XC from KLAF – KOKK
         1. Teach how to plan XC
         2. Pair students into 2 or 3 to follow along as you go
   3. Performance and W&B
   4. Explanation of NOTAMs
      1. Types and examples – read a few as a class
   5. Airport/Facility Directory
      1. What are they and how to read it
   6. VFR Flight Plan
      1. Figure 52 (pg. 227)
3. Navigation
   1. Explanation of Dead Reckoning and Pilotage
4. Explanation of GPS system

**Session X: FARs**

**Objectives**

At the conclusion of this session the students will be able to:

1. Recall the general material covered by FAR Parts 1 through 71
2. Recall the general material covered by FAR Parts 91.3 through 91.131
3. Recall the general material covered by FAR Parts 91.135 through 91.417
4. Describe the instances where NTSB Part 830 would apply to aircraft incidents and accidents.
5. Interpret the various FARs and describe how they apply to everyday flying.
6. Identify locations where FARs are easily accessible to pilots.

**Agenda**

1. FARs
   1. Divide the class into three groups
      1. Each group will be given a section of the FARs (chapter in the GLEIM)
      2. Have each group develop a story/report that covers the FARs
         1. Story/report can be either in accord or a violation of the FARs
      3. Give about 30 minutes for each group
   2. Once each group has created their story/report share with the class
      1. Discuss how the FARs were met or not met.
      2. Discuss consequences of not following the FARs
2. NTSB
   1. As a class discuss what NTSB is and what it does
   2. Demonstrate website of accident report database
3. Identify where they could find FARs
   1. Faa.gov
   2. FAR book

**Session XI: Aeromedical Factors**

**Objectives**

At the conclusion of this session the students will be able to:

1. Describe each aeromedical factor.
2. Summarize how each aeromedical factor affects a pilot while flying.

**Homework Assignment**

Students required to have:

1. Read GLEIM Section 6
2. Read AIM Chapter 8
3. Brought an Incident/Accident Report on Aeromedical Factor

**Agenda**

With PowerPoint:

1. Explain each Aeromedical Factor to include:
   1. Hypoxia
   2. Hyperventilation
   3. Sinus Problems
   4. Middle Ear and Spatial Disorientation
   5. Motion Sickness
   6. Carbon Monoxide Poisoning
   7. Decompression Sickness
   8. IMSAFE Checklist
      1. Make sure alcohol rules are emphasized
2. After each aeromedical factor, go through the incident/accident that each student brought to class related to that factor
   1. Have each student present their incident/accident and explain why the aeromedical factor led to fatal/non-fatal outcome
   2. As a class discuss what could have been done in order to prevent the incident/accident from happening

*If students didn’t bring an incident/accident report, PowerPoint will have one for each aeromedical factor*

**Session XII: Airplane Systems**

**Objectives**

At the conclusion of this session the students will be able to:

1. Explain various systems that comprise an engine, including:
   1. Engine ignition system
   2. Air induction system
   3. Engine lubrication system
2. Summarize conditions where carburetor icing is possible.
3. Identify indications that carburetor icing has occurred and identify solutions to carburetor icing.
4. Distinguish between the various methods aircraft use to provide electrical power.
5. Describe why a balanced air/fuel mixture is needed for normal combustion.
6. Give examples of when abnormal combustion may occur.
7. Describe the best taxiing technique during windy conditions.

**Agenda**

*With PowerPoint*

1. Engine
   1. Engine ignition systems
   2. Air Induction systems
   3. Engine lubrication systems
      1. Wet vs Dry sump
   4. Explain how these systems help fly the airplanes they’re flying
   5. Combustion
      1. Reasons for abnormal combustion
         1. Pre-ignition and Explosive combustion
      2. Reason for air/fuel mixture
   6. Fuel systems
      1. Fuel injected vs carbureted
         1. Carburetor icing
            1. What is it
            2. When does is occur
            3. How do we recover
2. Electrical
   1. Generator vs alternator
   2. Batteries
   3. Circuit Brakers
3. Flight controls
4. Review aircraft instruments
   1. As a class discuss the aircraft instruments found in the airplane their flying and how they are powered.

**Session XIII: Final Test**

**Objectives**

At the conclusion of this session the students will be able to:

1. Use endorsement given by instructor to take the FAA’s Sport Pilot Knowledge Exam.
2. Determine weak areas to study before taking the FAAs’ Sport Pilot Knowledge Exam.

**Homework Assignments**

Students required to have:

1. Studied for the test.

**Agenda**

1. Explain that this final test must be passed with a minimum of 70% to receive endorsement to take FAA’s written exam.
2. Explain that if they don’t pass, there will be some more review and a re-test will be conducted
3. Give the full session for taking of test.
4. Pass out test and answer sheet.
5. As tests are turned in
   1. Grade them to determine score
   2. If students passed – give endorsement to students
   3. If didn’t pass – advise students that once everyone has taken test, there will be opportunity to go over wrong answers.
      1. During this time determine next study session for review of material and re-test.
6. Scores will be kept confidential and only shared with the respective student