Flying Training

Instructor Guide: Aerospace Physiology Syllabus

8 June 2023

Air Education and Training Command

Contents

Summary of Changes

- **(May ’23)** Updated Night Vision Lab objectives and procedures.
- **(May ’23)** Updated Unaided Night Vision Trainer requirement. This is now an optional device.
- **(May ’23)** Updated objectives for AP01G: (Self-Imposed) Performance Threats, added bladder relief device content.
- **(May ’23)** Removed references to AFPAM 11-406, Aerospace Physiology Program Guidance.
- **(May ’23)** Changed “Initial High-Altitude Parachutist (HAP) Course” title to “Initial Parachutist Physiology Course.”
- **(May ’23)** Minor grammar and administrative changes.
- **(Apr ’23)** Updated Initial Physiology Course lesson times.
- **(Mar ’23)** Updated HAP altitude chamber flight objectives to correct mismatching guidance.
- **(Jun ’22)** Revised AP01H, Cabin Pressurization and Decompression lesson standards in Initial Physiology Training
- **(Jun ’22)** Created lesson APHI22D, Cabin Pressurization and Decompression and added to HAP Initial Training.
- **(Jun ’22)** Incorporated Introduction to Atmosphere, Respiration, and Circulation lessons into APHI21C, Physiological Effects of Altitude.
- **(Jun ’22)** Removed ear and sinus check as a training execution requirement.
- **(Jun ’22)** Revised chamber profile cards to reflect change in ear and sinus check requirement.
- **(Jun ’22)** Minor grammar and administrative changes
- **(Jun ’22)** **HAP Initial Exam has been revised to reflect syllabus changes**

Chapter 1

Course Description

1. Title — Aerospace Physiology Training

2. Identifier — S-O-B/A-APH

3. Objective — Train aircrew and parachutists on the physiological stresses associated with high altitude, high-G, and orientation-compromised flight environments. Provide students opportunities to recognize physiological stresses and human factors implications, apply preventative or mitigation countermeasures, and practice emergency procedures in a controlled setting. In accordance with (IAW) AFMAN 11-403, *Aerospace Physiological Training Program,* USAF Aerospace Physiology (AP) personnel, will conduct all training events contained in this syllabus.

4. Locations — USAF AP training locations equipped with altitude chambers and/or reduced Oxygen breathing devices (ROBD). USAF AP training locations that are not equipped with altitude chambers or ROBDs may provide academic portions of this syllabus.

5. Duration —

a. Initial Physiology Training—2 ground training days

b. Initial Parachutist Physiology Training – 1 ground training day

c. Refresher Physiology Training **—** 0.75 ground training day

6. Entry Prerequisites — All students who participate in altitude chamber or ROBD require the appropriate medical clearance to complete physiological training IAW AFMAN 11-403, *Aerospace Physiological Training Program* and AFI 48-123, *Medical Examinations and Standards*. Refresher students must have completed Initial Physiology training. (Note Track J)

7. Status Upon Graduation — Training completion will be documented on an AF Form 1274. Graduates will take completed AF Form 1274 to their Host Aviation Resource Management office for input to the appropriate database. Graduates are encouraged to maintain a personal copy of the AF Form 1274.

8. Course Inventory (see Chapter 3 for Academic Lessons)

a. Initial Physiology Training

Event	***Hours***
Academic Lessons	10.5
Night Vision Lab	0.5
Barany Chair / Spatial Disorientation Demo	0.5
Type 1 and Type 2 Altitude Chamber Flight	2.0
Final Examination	1.0
Total	14.5

Note 1: Initial Physiology hypoxia training must be conducted at facilities that have altitude chambers.
Note 2: Event hours are estimates based on accomplishing lesson objectives.

b. Initial Parachutist Physiology Training

Event	***Hours***
Academic Lessons	5.5
Night Vision Lab	0.5
Type 3 and Type 2 Altitude Chamber Flight	1.0
Final Examination	1.0
Total	8.50

Note 1: Initial Parachutist Physiology hypoxia training must be conducted at facilities that have altitude chambers.
Note 2: Event hours are estimates based on accomplishing lesson objectives.

c. Refresher Physiology Training

Event	*Hours*
Academic Lessons	4.25/4.25
Type 4/Type 5 Altitude Chamber Flight or ROBD Exposure	0.50/1.00
Total	4.75/5.25

Note 1: ROBD may be used for refresher training only. Successful completion of the hypoxia practical and night visual acuity event is required to complete training requirements.
Note 2: Event hours are estimates based on accomplishing lesson objectives.

Chapter 2

Course Administration

Section A —Instructor Guide Syllabus Management

1. **Syllabus Interpretation**

This syllabus is directive and must be followed as written. If no clear syllabus guidance exists, resolve the situation using the appropriate wing chain of command. If the logical course of action appears to conflict with other directives, OG Stan/Eval should contact Aerospace Physiology Lead Command (19 AF/A3OA) AETC.AP.LeadCommand@us.af.mil.

2. **Course Completion**

Students must successfully complete all syllabus-required training in order to graduate from a course. Practical instruction using Aerospace Physiology training devices will occur with academic training IAW AFMAN 11-403, *Aerospace Physiological Training Program.*

Section B — Training Management

1. **Initial Physiology Training**

Initial training requirements in this syllabus apply to all personnel who require physiology training. Initial training remains current for a period of five years, expiring the last day of the 60th month following completion.

2. **Refresher Training**

Personnel must complete refresher training no later than 5 years from the end of the month during which initial or previous refresher training was accomplished. This course is further divided into the following tracks:

- **a. Track A —** For aircrew who fly in aircraft equipped with an ejection seat.
- **b. Track T —** For aircrew who fly in fixed-wing aircraft without ejection seats. Note: CV-22 aircrew may attend either Track T or H course.
- **c. Track H —** For aircrew who fly in helicopter/rotary wing aircraft.
- **d. Track J —** For parachutists who have previously completed Initial Parachutist AP training and are Military Free Fall (MFF) qualified. Note: Members must repeat Initial Parachutist AP training if they did not graduate MFF before AP training expiration.
- **e. Track E —** For E-9 or O-6 (or higher) aircrew members or parachutists.

3. **Training Progression**

Instructors will use additional training options such as briefings and academic instruction to assist in correcting substandard performance. The APTU may refuse training to any individual identified as not exhibiting the attitude commensurate with high-risk physiology training. Additionally, in coordination with the flight surgeon, the APTU may also refuse training to any individual identified as not meeting the physical health commensurate with high-risk physiology training.

4. **Removal from Training**

A student may disenroll from training on request. The senior ranking AP officer when warranted (e.g. poor attitude, failure to complete academic requirements, or willfully demonstrating unsafe acts during training) may also disenroll a student for cause.

5. **Instructor Guides, Personal Lesson Plans, and Exams**
Courseware will be available to instructors on the AETC Flying Training Special Publications (Bookstore). Instructors have the authority to add, remove, or modify courseware as necessary to best meet local requirements and syllabus objectives (e.g., mishap examples may be updated and/or removed as necessary). 19 AF/A3OA develops instructor guides to support training detailed in this syllabus. Each instructor is responsible for developing personal lesson plans to include Instructor Based Trainings (IBTs), Instructor Guides (IGs), and Student Guides (SGs). These support documents expand on the information in this syllabus and contain the detail necessary to ensure consistent training for all students. While instructors should always refer to the guides for event construction, this syllabus (implementing AFMAN 11-403) is the governing document on training. Exams must be requested by emailing AP Lead Command at AETC.AP.LeadCommand@us.af.mil.

Section C — Grading Procedures

1. Performance Grading — Use the following performance grading scale to measure the student's ability on each task as required for each event.

Grade	*Explanation of Grade*
Go	All required behaviors were assessed and the desired student learning objectives were achieved.
No-Go	All required behaviors were assessed and the desired student learning objectives were not achieved.

2. Proficiency Levels (Academic) — In order to complete the overall proficiency level specified for a particular training objective, the student must be a "Go." For initial AP training, a "Go" is further defined by passing the Initial Aerospace Physiology Course Examination with a score of 85% or higher. Scores below 85% require more instruction and retest. Students failing a second test will be reported to their unit commander. Instructor will contact student's commander to discuss mission impacts and timelines for successful completion of training. For Refresher AP training, a "Go" is further defined by instructor discretion and documentation on the AF Form 1274.

3. Proficiency Levels (Practical) — Where an observable action or performance level must be graded (e.g. hypoxia recognition and recovery) instructors will use the Air Force Proficiency Code Key. Students must attain a proficiency of (4c) for the hypoxia and night vision practicals. Students must attain a proficiency of (3b) for the Oxygen Equipment Lab practical. Students must attain a proficiency of (B) for the Spatial Disorientation/Barany Chair demonstration.

Proficiency Code Key		
	SCALE VALUE	DEFINITION: The Individual
TASK PERFORMANCE LEVELS	1	Can do simple parts of the task. Needs to be told or shown how to do most of the task. (EXTREMELY LIMITED)
	2	Can do most parts of the task. Needs help only on hardest part. (PARTIALLY PROFICIENT)
	3	Can do all parts of the task. Needs only a spot check of completed work. (COMPETENT)
	4	Can do the complete task quickly and accurately. Can tell or show how to do the task. (HIGHLY PROFICIENT)
***TASK KNOWLEDGE LEVELS**	a	Can name parts, tools, and simple facts about the task. (NOMENCLATURE)
	b	Can determine step-by-step procedures for doing the task. (PROCEDURES)
	c	Can identify why and when the task must be done and why each step is needed. (OPERATING PRINCIPLES)
	d	Can predict, isolate, and resolve problems about the task. (COMPLETE THEORY)
****SUBJECT KNOWLEDGE LEVELS**	A	Can identify basic facts and terms about the subject. (FACTS)
	B	Can identify relationship of basic facts and state general principles about the subject. (PRINCIPLES)
	C	Can analyze facts and principles and draw conclusions about the subject. (ANALYSIS)
	D	Can evaluate conditions and make proper decisions about the subject. (EVALUATION)

EXPLANATIONS

* A task knowledge scale value may be used alone or with a task performance scale value to define a level of knowledge for a specific task. (Examples: b and 1b)

** A subject knowledge scale value is used alone to define a level of knowledge for a subject not directly related to any specific task, or for a subject common to several tasks.

^ This mark is used alone instead of a scale value to show that no proficiency training is provided in the course.

X This mark is used alone in course columns to show that training is required but not given due to limitations in resources.

Section D — Initial Physiology Course Training Standards (CTS)

The following table defines the course training standards:

Performance	*Conditions*	*Standards*
1. Intro to Human Factors in Aviation (AP01A)		
a. Know the basic information on the science of Human Factors (HF) and its role in aviation.	a. Classroom	a. Recall the definition of HF. b. Identify the HF challenges associated in USAF aviation and human performance implications. c. Identify the categories of human error. d. Recall the DoD Human Factor Analysis and Classification System and its role in USAF aviation safety.
2. Physiological Effects of Altitude (AP01B)		
a. Know the characteristics of the Earth's atmosphere.	a. Classroom	a. Recognize the attributes of the atmosphere. b. Identify which gasses are present in the atmosphere and their associated percentage of the total composition. c. Recall the common units of measurement for atmospheric pressure. d. Recognize the description and common unit of measure of the U.S. Standard Atmosphere. e. Recognize the definition of the standard temperature lapse rate. f. List the physiological divisions of the atmosphere.
b. Know the impact of the gas laws.	a. Classroom	a. Define partial pressure and identify its notation. b. List the gas laws. Identify the following gas laws and their definition: Dalton's law, Boyle's law, Henry's law, Gay-Lussac's law, Graham's law. c. Describe the aviation significance /effects of each gas law.
c. Know the structures and functions of the respiratory system.	a. Classroom	a. List the phases of respiration. b. List structures that are important to respiration. c. Describe the functions of each structure in the respiratory system.
d. Know the structures and functions of the circulatory system.	a. Classroom	a. List the structures of the circulatory system. b. Recall functions of the structures of the circulatory system. c. Identify factors affecting oxygen delivery to the tissues.
e. Know the characteristics of hypoxia.	a. Classroom	a. Identify the definition of hypoxia. b. Recognize the characteristics of hypoxia. c. Recall the types of hypoxia and associated causes. d. Identify the factors that induce hypoxia and change onset rate of symptoms.
f. Know the signals for recognizing hypoxia and methods for preventing it.	a. Classroom	a. Recognize the importance of immediately correcting after a rapid decompression. b. Identify the signs and symptoms of hypoxia onset. c. Identify the procedures to treat hypoxia. d. Observe hypoxia symptoms exhibited during altitude exposure.
g. Know the characteristics of hyperventilation/hypocapnia.	a. Classroom	a. Recall the definition and causes of hyperventilation/hypocapnia. b. Recall the signs of and symptoms of hyperventilation/hypocapnia. c. Identify the procedures to treat hyperventilation/hypocapnia. d. Describe in-flight emergency procedures for treating hyperventilation/hypocapnia. e. Recall the similarities of treatment for hypoxia and hyperventilation/hypocapnia.

Performance	*Conditions*	*Standards*
h. Know the characteristics of trapped gas disorders.	a. Classroom	a. Identify the various trapped gas disorders and areas of the body most likely to be affected. b. Recall symptoms of trapped gas disorders and the phase of flight in which symptoms are likely to occur. c. Explain how to treat and prevent trapped gas disorders.
i. Know the characteristics of decompression sickness (DCS).	a. Classroom	a. Identify the common types and causes of decompression sickness. b. Identify the impact various factors have on DCS incidence and severity. c. Identify the signs and symptoms associated with each type of decompression sickness. d. Recall the corrective actions for suspected decompression sickness. e. List methods used to treat decompression sickness.
3. (Self-Imposed) Performance Threats (AP01G)		
a. Know the effects over-the-counter (OTC) medications have on the crewmember.	a. Classroom	a. Identify the effects of common OTC medications. b. List the types of common OTC medications. c. Describe the potential for nutritional supplements to affect in-flight performance. d. Recall that there exists an Air Force policy on OTC medications and nutritional supplements.
b. Know the residual effects of alcohol on a crewmember in-flight.	a. Classroom	a. Identify the effects of alcohol on the body, specifically its impacts on in-flight performance. b. Identify Air Force policy concerning alcohol consumption by crewmembers.
c. Know the hazards associated with smoking and chewing tobacco products.	a. Classroom	a. Describe the effects of smoking and smokeless tobacco, specifically impacts on in-flight performance. b. Recall the physiological effects of carbon monoxide.
d. Know the physiological need for proper diet and nutrition.	a. Classroom	a. Describe the physiological effects of diet and aviation performance, e.g. hypoglycemia.
e. Know the adverse impact of dehydration on crewmember performance.	a. Classroom	a. List the signs and symptoms associated with dehydration. b. Recall methods to combat dehydration.
f. Know the causes of acute and chronic fatigue.	a. Classroom	a. Define acute and chronic fatigue. List the causes and remedies for acute and chronic fatigue. b. Recognize ways to reduce the effects of fatigue. c. Describe how to minimize the effects of circadian rhythm disruptions.
g. Know the role of GO/NO-GO pills as fatigue management strategy.	a. Classroom	a. Describe the mission implications of GO/NO-GO pill usage.
h. Know the effects of caffeine on the body.	a. Classroom	a. List the effects of caffeine on the body. b. Understand the impacts of caffeine on in-flight performance.
i. Know the importance of physical fitness on aircrew situations.	a. Classroom	a. Recall proper aerobic and anaerobic fitness principles.
j. Know the effects of thermal stress on human performance.	a. Classroom	a. Identify impacts to in-flight performance resulting from hot / cold stress. b. Understand the recommendations for protection from cold stress. c. Understand the recommendations for protection from heat stress. d. Identify physiological effects of thermal stress in flight.

Performance	*Conditions*	*Standards*
k. Know the availability of bladder relief devices and how to access them.	a. Classroom	a. Recall that there are a variety of bladder relief devices available to aircrew members. b. Recall where to request and pickup bladder relief devices. c. Recall where to find more information.
4. Physiology Considerations of Aircrew Flight Equipment (AP01K)		
a. Identify and operate aircraft oxygen systems.	a. Classroom	a. Describe the characteristics of aircraft oxygen storage systems. b. Describe safety concerns and characteristics of aviator's breathing oxygen. c. Identify the proper use of helmet, mask, and connector assemblies. d. Identify and operate emergency oxygen sources. e. Demonstrate and explain the P.R.I.C.E. check.
b. Know the pressure breathing requirements and techniques.	a. Classroom	a. Describe why and when pressure breathing is necessary for the aircrew member. b. Describe changes required to normal respiration resulting from pressure breathing.
5. **Cabin Pressurization and Decompression (AP01H)**		
a. Know how aircraft pressurization affects aircrew members.	a. Classroom	a. Identify characteristics of military aircraft pressurization systems b. Identify advantages and disadvantages of military aircraft pressurization systems c. Identify types of aircraft cabin decompressions and factors affecting the severity each d. Identify indications of aircraft cabin decompression e. Identify effective corrective actions to be taken following an aircraft cabin decompression.
6. Vision (AP01C)		
a. Know the anatomy and function of the eye.	a. Classroom	a. Recognize structures of the eye that contribute most significantly to vision. b. Identify the functions of each structure that contribute most significantly to vision. c. Recognize the physiological and anatomical blind spots of the eye.
b. Know the characteristics of the visual field.	a. Classroom	a. Identify the characteristics of both focal and peripheral vision. b. Describe the limitations of focal and peripheral vision. c. Understand the electromagnetic spectrum and how it relates to nigh vision devices (NVD).
c. Know the limitations and visual illusions associated with daytime flight.	a. Classroom	a. Recognize how visual contrast, target shape, target movement, environmental conditions, and empty-field myopia limit the ability to perceive objects in the visual field. b. Identify the effect that perception, reaction time, visual acquisition, and scanning have on midair collision avoidance. c. Describe the correct scanning technique used to identify objects. d. List factors that can cause daytime visual illusions.
d. Know the limitations and visual illusions associated with low-light level and night flying environments.	a. Classroom	a. List the physiological characteristics of night vision. b. Describe dark adaptation's influence on night vision. c. Define the night blind spot. d. Identify the correct technique to keep an object in sight at night or under low-light conditions.

Performance	*Conditions*	*Standards*
e. Comprehend night vision conditions that contribute to illusions.	a. Classroom	a. Describe the autokinesis illusion. b. Demonstrate the method used to prevent the autokinesis illusion. c. Demonstrate how flash blindness produces debilitating effects on dark adaptation.
f. Know the measures that help ensure maximum visual acuity in night flying conditions.	a. Classroom	a. Describe techniques to maximize visual acuity in night environments. b. Identify methods to prevent night visual illusions. d. Understand basic night vision device (NVD) components and how they function. e. Understand basic limitations of NVDs such as the effects of illumination, contrast, and shadows on image quality. f. List methods to improve NVG use.
g. Know the characteristics of lasers and associated actions upon exposure.	a. Classroom	a. List the physiological hazards associated with laser exposures. b. Identify procedures to prevent laser exposure injuries. c. Identify procedures after laser exposure.
7. Spatial Disorientation (SD) (AP01E)		
a. Know the characteristics of spatial disorientation.	a. Classroom	a. Know the threats and impacts of the different types of spatial disorientation. b. List the four sensory systems used in orientation. c. Define the relationship of the sensory systems to spatial disorientation.
b. Know the characteristics of the orientation sensory systems.	a. Classroom	a. Select the sensory system that provides the strongest and usually most reliable orientation information. b. Describe the vestibular system. c. Define the relationship of the vestibular system and the two subsystems: semicircular canals and the otolith organs. d. Describe the somatosensory system's function in-flight. e. Explain the reason for the somatosensory system's unreliability in-flight.
c. Know the characteristics of the types of vestibular induced spatial disorientation.	a. Classroom	a. Identify the cause of somatogyral illusions. b. Identify the cause of somatogravic illusions.
d. Know the factors affecting spatial disorientation.	a. Classroom	a. Recall environmental factors that can lead to spatial disorientation. b. Recall physiological factors that can lead to spatial disorientation.
e. Know how to prevent and / or overcome spatial disorientation.	a. Classroom	a. Recall methods used to prevent spatial disorientation. b. Recall procedures used to overcome spatial disorientation.
f. Know the causes of and techniques to prevent / overcome motion sickness in-flight.	a. Classroom	a. Identify the most widely accepted theory of the cause for motion sickness. b. Identify techniques to help prevent and/or treat motion sickness.
8. Noise and Vibration (AP01I)		
a. Know the characteristics of noise.	a. Classroom	a. Define noise. b. Recall the definitions and units of measure of frequency, intensity, and duration. c. List characteristics of noise that affect hearing.
b. Know the effects of hazardous noise on hearing capability.	a. Classroom	a. List types of hearing loss associated with high intensity noise. b. Identify the potential non-auditory effects of noise on crewmembers' in-flight performance.
c. Know protective measures used to minimize hazardous noise exposure.	a. Classroom	a. List devices that help minimize hazardous noise. b. Describe techniques for minimizing hazardous noise exposure.

Performance	*Conditions*	*Standards*
d. Know the potential effects of prolonged exposure to aircraft vibration.	a. Classroom	a. Recall the definition of vibration. b. List characteristics of vibration. c. Identify how vibration energy is passed through the body. d. Describe symptoms of vibration exposure. e. Review ways to minimize the vibration symptoms
9. Attention Management Threats to Situational Awareness (AP01D)		
a. Know the levels of awareness.	a. Classroom	a. Identify the two primary types of information processing. b. Outline the subconscious level of awareness. c. Outline the conscious level of awareness.
b. Comprehend some of the cognitive causes of a loss of situational awareness.	a. Classroom	a. Identify attention threats. b. Identify inappropriate motivations.
c. Know how to recognize, prevent, and treat lost situational awareness resulting from attention management threats.	a. Classroom	a. Identify the tools for preventing lost situational awareness. b. Identify cues for recognizing a loss of situational awareness. c. Identify the techniques for recovering from lost situational awareness.
d. Comprehend the impacts of physiological issues on situational awareness.	a. Classroom	a. Identify physiological issues that can potentially degrade an individual's situational awareness. b. Identify physiological issues that can degrade an individual's decision-making.
10. Acceleration (Required only for personnel flying in high-G aircraft) (AP01F)		
a. Know the definition and characteristics of G forces.	a. Classroom	a. Identify the types of acceleration. b. Identify the types of G force. c. Recall the definition of each type of G force. d. Identify the physical symptoms associated with Gz.
b. Know the characteristics of the factors that determine the effects of G forces on a crewmember's body.	a. Classroom	a. List the factors determining the effects of G force on a crewmember's body. b. Identify principle physiological effects and associated symptoms of exposure to G forces. c. Define GLOC. d. Recognize what causes blackout and how it is different from G-Induced Loss of Consciousness (G-LOC).
c. Comprehend the characteristics of G-LOC.	a. Classroom	a. Describe the symptoms of each of the phases of incapacitation. b. Explain the impact of relative incapacitation on the total time required to regain control of the aircraft after G-LOC.
d. Know the methods used to help prevent G-LOC.	a. Classroom	a. List methods to increase G tolerance. b. Detail G-suit function and level of protection provided. c. Describe the elements involved in correctly performing the Anti-G Straining Maneuver (AGSM).
e. Know the common errors in performing the AGSM.	a. Classroom	a. List the common errors involved in performing the AGSM. b. Detail common mission characteristics that are likely to cause AGSM errors.
f. Know the characteristics of the methods used to increase a crewmember's tolerance to positive G-forces.	a. Classroom	a. Describe physiological factors related to increased performance in a positive G force environment. b. Recognize the role self-imposed stressors play in decreasing G force tolerance.

Performance	*Conditions*	*Standards*
11. Physiological Considerations of Aircraft Egress (AP01J)		
a. Know the principle courses of action to minimize injury during aircraft egress.	a. Classroom	a. Understand basic principles of aided escape in relation to design. b. Describe common aided escape injuries. c. Understand basic principles of unaided escape. d. Describe common unaided escape injuries. e. Describe the physiological threats of high-altitude egress. f. Describe ways to improve survivability before, during, and after a crash.

Section E — Initial Physiology Practical/Device Training Standards (CTS)

The following table defines the course training standards:

Performance	**Conditions**	**Standards**
1. Type 1 Initial Altitude Chamber Flight (AP05L) *Prerequisites: AP01B, AP01H, AP01C, AP01Q AP01K*		
a. Given proper aviation equipment and an altitude chamber, students will apply previously taught academic principles in a controlled low-pressure environment.	a. Altitude Chamber	a. Recognize and treat symptoms of hypoxia without the physical assistance of an inside observer. **Note:** Physical assistance is defined as physically placing the mask on the student's face, providing any physical action, which results in 100% oxygen under pressure b. Discuss conditions, which could produce hypocapnia and corrective procedures. c. Counteract mechanical effects of pressure change in ears, sinuses and gastrointestinal tract. d. Use proper positive pressure breathing techniques as required. e. Perform appropriate in-flight checks of oxygen equipment. f. Recognize visual degradation that results from decreased oxygen/increased cabin altitude during night flying conditions. g. Demonstrate proper use of emergency / portable oxygen equipment. h. Identify objective hypoxia signs (one side of chamber will experience hypoxia first, the other side will observe). **Note:** Debriefs are accomplished by a qualified instructor. Instructors may use video footage for the hypoxia demonstration debrief.
		Special Instructions: a. Students who fail to recognize and recover from hypoxia without the physical assistance of an inside observer may receive a debrief (Aerospace Physiology Officers (APOs) will use video footage, if available) that focuses on observing the importance hypoxia recognition and recovery. Where discipline and motivation issues are present, an APO may direct the student to re-accomplish training at another date. c. If an ROBD is available, the student may accomplish an ROBD experience if the remedial training is specific to hypoxia recognition and recovery.

<table>
<tr><td colspan="3">2. Type 2 Rapid Decompression Altitude Chamber Flight (AP05M)
Prerequisites: AP05L</td></tr>
<tr><td>a. In an altitude chamber, students will apply academic principles concerning sudden and unexpected loss of cabin pressurization.</td><td>a. Lock Compartment in the Altitude Chamber</td><td>a. Familiarize student with the physical and physiological effects of a rapid decompression.
b. Demonstrate proper use of oxygen equipment without the assistance of an inside observer.
c. Implement appropriate emergency procedures following a rapid decompression.</td></tr>
<tr><td colspan="3">3. Barany Chair/Spatial Disorientation Demo (Familiarization) (AP01O)
Prerequisites: AP01E</td></tr>
<tr><td rowspan="2">a. Barany Chair: In a classroom environment, using a Barany Chair, students accomplish physical maneuvers to gain a practical understanding, and recognition of visual and vestibular limitations and their susceptibility to error.
b. SD Trainer: In a flight-simulated environment, students will accomplish basic aviation procedures in conditions that promote visual illusions due to common SD factors.</td><td rowspan="2">a. Barany Chair</td><td>a. Recognize and become familiar with the following illusions: Graveyard Spin/Spiral, Nystagmus, Leans, and Coriolis.
b. Practice and perform recovery methods to maintain aircraft control while disoriented. (SD Trainer only)
c. Observe how other students respond to illusions to understand the effects of SD and the physiological responses to SD illusions.</td></tr>
<tr><td>Special Instructions:
a. Refer to Chapter 4 of this syllabus for specific maneuver requirements.</td></tr>
<tr><td colspan="3">4. Night Vision Lab (AP01Q)
Prerequisites: AP101C</td></tr>
<tr><td rowspan="2">a. In a low-light classroom environment students will gain an enhanced understanding of night vision threats and develop measures to optimize situational awareness at night.</td><td rowspan="2">a. Classroom</td><td>a. Experience reduced visual acuity as a result of exposure to a darkened environment.
b. Experience a shift or loss in color perception.
c. Experience focal and peripheral vision degradation.
d. Practice methods to improve unaided night vision.
e. Practice the method used to prevent the autokinesis illusion.
f. Experience how flash blindness produces debilitating effects on dark adaptation.
g. Experience strobe light demonstration and its effects of visual acuity.
h. Conduct Day & Night time scanning techniques to maximize visual acuity in a nighttime environment.
i. Discuss methods to prevent night visual illusions using Nighttime scanning techniques.</td></tr>
<tr><td>Special Instructions:
a. The Unaided Night Vision Trainer may be used to meet these objectives. Refer to Chapter 4 of this syllabus for specific unaided night vision trainer-operating instructions.</td></tr>
</table>

Section F — Initial Parachutist Physiology Course Training Standards (CTS)

The following table defines the course training standards:

Performance	*Conditions*	*Standards*
1. Attention Management Threats to Situational Awareness (APHI21B)		
a. Students will receive platform instruction on Attention management threats to human performance in MFF operations. b. Students will be presented with and recall introductory human factors principles and their effect on human performance with respect to Military Freefall Operations.	a. Classroom	a. Recall the theory and operational implications associated with decision-making, motivation, attention management in the MFF environment. b. Identify recognition, prevention, and mitigation techniques with respect to attention management threats. c. Recall basic Human Factors theory, the USAF HF definition, its associated terminology, and operational HF concepts as they pertain to MFF.
2. Physiological Effects of Altitude (APHI21C)		
a. After receiving a lecture and without the use of references, students will identify the physiological threats associated with operations at altitude and recall standardized countermeasures to mitigate the physiological effects of high-altitude parachuting.	a. Classroom	a. Recognize how the Atmosphere affects Freefall Operations. b. Recall the characteristics of temperature lapse rate. c. Identify the structures and functions of the respiratory system. d. Identify the characteristics, prevention, and treatment of all types of hypoxia and hypocapnia. e. Recall the characteristics, prevention, and treatment of trapped gas disorders. f. Recall the characteristics, prevention, and treatment of evolved gas disorders.
3. Cabin Pressurization and Decompression (APH122D)		
a. Know how aircraft pressurization affects aircrew members.	a. Classroom	a. Identify characteristics of military aircraft pressurization systems. b. Identify advantages and disadvantages of military aircraft pressurization systems. c. Identify types of aircraft cabin decompressions and indications of each. d. Identify factors affecting the severity of a decompression. e. Identify effective corrective actions to be taken following an aircraft cabin decompression.
4. Vision (APHI21E)		
b. Students will receive platform instruction on the anatomy and function of the eye and its effects on human performance in military freefall operations.	c. Classroom	a. Know the characteristics of the visual field, visual limitations and perceptual deficiencies. b. Recall appropriate mitigation tactics for perceptual deficiencies/losses of orientation associated with high altitude parachuting. c. Recall NVD preflight considerations, capabilities, limitations, and characteristics.
5. Performance Threats (includes Noise and Vibration) (APHI21G)		
a. After receiving a lecture on mission and self-imposed factors that negatively and positively affect human performance, students will recall human performance threats, mitigation tactics, and performance optimization methods for parachutists in Military Freefall (MFF) operations.	a. Classroom	a. Recall the appropriate uses of common over the counter medications and the need for Flight Surgeon/Diving Medical Officer approval IAW AF and DoD Regulations. b. Identify risks associated with the use of dietary supplements including their synergistic affects. c. Identify nutritional strategies to maintain performance during sustained airborne operations. d. Identify dehydration as it relates to Decompression Sickness risk. e. Explain the effects of fatigue on operational performance.

6. Physiology Considerations of Parachutist Oxygen Equipment (APHI21H)		
a. Identify and operate high altitude parachutist oxygen systems.	a. Classroom	a. Describe safety concerns and characteristics of aviator's breathing oxygen. b. Describe characteristics of oxygen storage systems c. Describe why and when pressure breathing is necessary. d. Understand the function of diluter & pressure demand regulators. e. Identify the proper use of helmet, mask, and connector assemblies. f. Identify and operate emergency oxygen sources. Demonstrate and explain the P.R.I.C.E. check when using parachutist equipment and while using oxygen equipment in the altitude chamber.

Section G — Initial Parachutist Physiology Practical/Device Training Standards (DTS)

The following table defines the course training standards:

Performance	Conditions	Standards
2. Type 3 Initial Parachutist Altitude Chamber Flight *Prerequisites: APHI21C, APHI22D, APHI21E, APHI21F, APHI21H*		
a. Given proper aviation equipment and an altitude chamber, students will apply previously taught academic principles in a controlled low-pressure environment.	a. Altitude Chamber	a. Recognize and treat symptoms of hypoxia without the physical assistance of an inside observer. **Note:** Physical assistance is defined as physically placing the mask on the student's face, or providing any physical action, which results in 100% oxygen under pressure. b. Discuss conditions, which could produce hypocapnia and corrective procedures. c. Counteract mechanical effects of pressure change in ears, sinuses and gastrointestinal tract. d. Use proper positive pressure breathing techniques as required. e. Perform appropriate in-flight checks of oxygen equipment. f. Recognize visual degradation that results from decreased oxygen/increased cabin altitude during night flying conditions. g. Demonstrate proper use emergency / portable oxygen equipment. h. Identify objective hypoxia signs during hypoxia practical. **Special Instructions:** a. Students who fail to recognize and recover from hypoxia symptoms without the physical assistance of an inside observer may receive a debrief (APOs will use video footage if available) that focuses on observing the importance hypoxia recognition and recovery. Where discipline and motivation issues are present, an APO may direct the student to re-accomplish training at another date. b. If an ROBD is available, the student may accomplish an ROBD experience if the remedial training is specific to hypoxia recognition and recovery.
***3.* Type 2 Rapid Decompression Altitude Chamber Flight** *Prerequisites: APHI21I*		
a. Designed to give initial parachutist trainees practical experience in applying the techniques and principles learned in the classroom to an accidental loss of cabin pressure.	a. Lock compartment in the Altitude Chamber	a. Understand pressurization schedules. b. Select the advantages and disadvantages of pressurization systems. c. Identify factors that control the rate of decompression. d. Determine the physical indications and physiological effects of a rapid decompression. e. Enhance trainees' confidence in their ability to effectively function in the event of aircraft decompression. f. Identify the oxygen equipment emergency procedures following a rapid decompression.

<table>
<tr><td colspan="3">4. Night Vision Lab
Prerequisites: APHP21E</td></tr>
<tr><td rowspan="2">a. Comprehend night vision conditions that contribute to illusions.
b. Know the measures that help ensure maximum visual acuity in night jump operations.</td><td rowspan="2">a. Classroom</td><td>a. Experience reduced visual acuity as a result of exposure to a darkened environment.
b. Experience a shift or loss in color perception.
c. Experience focal and peripheral vision degradation.
d. Practice methods to improve unaided night vision.
e. Practice the method used to prevent the autokinesis illusion.
f. Experience how flash blindness produces debilitating effects on dark adaptation.
g. Experience strobe light demonstration and its effects of visual acuity.
h. Conduct Day & Nighttime scanning techniques to maximize visual acuity in a nighttime environment.
i. Discuss methods to prevent night visual illusions using Nighttime scanning techniques.</td></tr>
<tr><td>Special Instructions:
a. The Unaided Night Vision Trainer may be used to meet these objectives. Refer to Chapter 4 of this syllabus for specific unaided night vision trainer-operating instructions.</td></tr>
</table>

Section H — Refresher/Continuation Course Training Standards (CTS) – All Tracks

The following table defines the course training standards:

Performance	*Conditions*	*Standards*
1. Physiological Effects of Altitude		
a. Know the characteristics of hypoxia.	a. Classroom/ Chamber	a. Identify the definition of hypoxia. b. Recognize the characteristics of hypoxia. c. Recall the types of hypoxia and associated causes. d. Identify the factors that induce hypoxia and change onset rate of symptoms.
b. Know the signals for recognizing hypoxia and methods for preventing it.	a. Classroom/ Chamber	a. Recognize the importance of immediately correcting for hypoxia after a rapid decompression. b. Identify the signs and symptoms of hypoxia onset. c. Identify the procedures to treat hypoxia. d. Observe hypoxia symptoms exhibited during altitude exposure.
c. Know the characteristics of hyperventilation/ hypocapnia.	a. Classroom/ Chamber	a. Recall the definition and causes of hyperventilation/hypocapnia. b. Recall the signs of and symptoms of hyperventilation/hypocapnia. c. Identify the procedures to treat hyperventilation/hypocapnia. d. Describe in-flight emergency procedures for treating hyperventilation/hypocapnia. e. Recall the similarities of treatment for hypoxia and hyperventilation/hypocapnia.
d. Know the characteristics of trapped gas disorders.	a. Classroom/ Chamber	a. Identify the various trapped gas disorders and areas of the body most likely affected. b. Recall symptoms of trapped gas disorders and the phase of flight in which symptoms are likely to occur. c. Explain how to treat and prevent trapped gas disorders.
e. Know the characteristics of decompression sickness.	a. Classroom/ Chamber	a. Identify the common types and causes of decompression sickness. b. Identify the impact various factors have on DCS incidence and severity. c. Identify the signs and symptoms associated with each type of decompression sickness. d. Recall the corrective actions for suspected decompression sickness. e. List methods used to treat decompression sickness.
2. Performance Threats		
a. Know the effects over-the-counter (OTC) medications have on the crewmember.	a. Classroom	a. Identify the effects of common OTC medications. b. List the types of common OTC medications. c. Describe the potential for nutritional supplements to affect in-flight performance. d. Recall there exists Air Force policies on OTC medications and nutritional supplements.
b. Know the residual effects of alcohol on a crewmember in-flight.	a. Classroom	a. Identify the effects of alcohol on the body, specifically impacts on in-flight performance. b. Identify Air Force policy concerning alcohol consumption by crewmembers.
c. Know the hazards associated with smoking and chewing tobacco products.	a. Classroom	a. Describe the effects of smoking and smokeless tobacco, specifically impacts on in-flight performance. b. Recall the physiological effects of carbon monoxide.
d. Know the physiological need for proper diet and nutrition.	a. Classroom	a. Describe the effects of hypoglycemia on in-flight performance.

Performance	*Conditions*	*Standards*
e. Know the adverse impact of dehydration on crewmember performance.	a. Classroom	a. List the signs and symptoms associated with dehydration. b. Recall methods to combat dehydration.
f. Know the causes of acute and chronic fatigue.	a. Classroom	a. List the causes and remedies for acute and chronic fatigue. b. Recognize ways to reduce the effects of fatigue. c. Describe how to minimize the effects of circadian rhythm disruptions.
g. Know the effects of caffeine on the body.	a. Classroom	a. List the effects of caffeine on the body. b. Understand the impacts of caffeine on in-flight performance.
h. Know the importance of physical fitness on aircrew situations.	a. Classroom	a. Recall proper aerobic and anaerobic fitness principles.
i. Know the effects of thermal stress on human performance.	a. Classroom	a. Identify impacts to in-flight performance resulting from hot/cold stress. b. Understand the recommendations for protection from cold stress. c. Understand the recommendations for protection from heat stress.
3. Physiology Considerations of Aircrew Flight Equipment		
a. Identify and operate aircraft/high altitude parachutist oxygen systems.	a. Chamber/ Demo	a. Describe safety concerns and characteristics of aviator's breathing oxygen. b. Understand the function of pressure demand regulators. c. Identify and operate emergency oxygen sources in the chamber. d. Demonstrate and explain the P.R.I.C.E. check.
4. Vision		
a. Know the characteristics of the visual field.	a. Classroom	a. Identify the characteristics of both focal and peripheral vision. b. Describe the limitations of focal and peripheral vision.
b. Know the limitations and visual illusions associated with daytime flight.	a. Classroom	a. Recognize how visual contrast, target shape, target movement, environmental conditions, and empty-field myopia limit the ability to perceive objects in the visual field. b. Identify the effect that perception, reaction time, visual acquisition, and scanning have on midair collision avoidance. c. Describe the correct scanning technique used to identify objects. d. List factors that can cause daytime visual illusions.
c. Know the limitations and visual illusions associated with low-light level and night flying environments.	a. Classroom	a. List the physiological characteristics of night vision. b. Describe dark adaptation's influence on night vision. c. Define the night blind spot. d. Identify the correct technique to keep an object in sight at night or under low-light conditions.
d. Comprehend night vision conditions that contribute to illusions.	a. Classroom	a. Discuss the method used to prevent the autokinesis illusion. b. Discuss how flash blindness produces debilitating effects on dark adaptation.
e. Know the measures that help ensure maximum visual acuity in night flying conditions.	a. Classroom	a. Discuss techniques to maximize visual acuity in night environments. b. Discuss methods to prevent night visual illusions. c. Understand basic limitations of NVGs such as the effects of illumination, contrast, and shadows on image quality. d. List methods to improve NVG use.

Performance	*Conditions*	*Standards*
f. Know the characteristics of lasers and associated actions upon exposure.	a. Classroom	a. List the physiological hazards associated with laser exposures. b. Identify procedures to prevent laser exposure injuries.
5. Spatial Disorientation (Not Required for Track J)		
a. Know the characteristics of spatial disorientation.	a. Classroom	a. Know the threats and impacts of the different types of spatial disorientation. b. List the four sensory systems used in orientation. c. Define the relationship of the sensory systems to spatial disorientation.
b. Know the characteristics of the orientation sensory systems.	a. Classroom	a. Select the sensory system that provides the strongest and usually most reliable orientation information. b. Describe the vestibular system. c. Define the relationship of the vestibular system and the two subsystems: semicircular canals and the otolith organs. d. Explain the reason for the somatosensory system's unreliability in-flight. e. Describe the somatosensory system's function in-flight.
c. Know the characteristics of the types of vestibular induced spatial disorientation.	a. Classroom	a. Discuss the cause of somatogyral illusions. b. Review the cause of somatogravic illusions.
d. Know the factors affecting spatial disorientation.	a. Classroom	a. Recall environmental factors that can lead to spatial disorientation. b. Recall physiological factors that can lead to spatial disorientation.
e. Know how to prevent and / or overcome spatial disorientation.	a. Classroom	a. Recall methods used to prevent spatial disorientation. b. Recall procedures used to overcome spatial disorientation.
6. Noise and Vibration		
a. Know the effects of hazardous noise on hearing capability.	a. Classroom	a. List types of hearing loss associated with high intensity noise. b. Identify the potential non-auditory effects of noise on crewmembers' in-flight performance.
b. Know protective measures used to minimize hazardous noise exposure.	a. Classroom	a. List devices that help minimize hazardous noise. b. Describe techniques for minimizing hazardous noise exposure.
c. Know the potential effects of prolonged exposure to aircraft vibration.	a. Classroom	a. Describe symptoms of vibration exposure. b. Review ways to minimize the vibration symptoms
7. Attention Management Threats to Situational Awareness		
a. Know the levels of awareness.	a. Classroom	a. Identify the two primary levels of awareness. b. Outline the subconscious level of awareness. c. Outline the conscious level of awareness.
b. Comprehend some of the cognitive causes of a loss of situational awareness.	a. Classroom	a. Identify attention threats listed in IBTs. b. Identify and discuss the top Human Factors in MDS group mishaps over the last 5 years.
c. Know how to recognize, prevent, and treat lost situational awareness resulting from attention management threats.	a. Classroom	a. Identify the tools for preventing lost situational awareness. b. Identify cues for recognizing a loss of situational awareness. c. Identify the techniques for recovering from lost situational awareness.
d. Comprehend the impacts of physiological issues on situational awareness.	a. Classroom	a. Identify physiological issues that can potentially degrade an individual's situational awareness. b. Identify physiological issues that can degrade an individual's decision-making.

Performance	*Conditions*	*Standards*
8. Acceleration (Required only for personnel flying in high-G aircraft Track A/Track E, if applicable)		
a. Know the characteristics of the factors that determine the effects of G forces on a crewmember's body.	a. Classroom	a. List the factors determining the effects of G force on a crewmember's body. b. Identify principle physiological effects and associated symptoms of exposure to G forces. c. Recognize what causes blackout and how it is different from G-Induced Loss of Consciousness (G-LOC).
b. Comprehend the characteristics of G-LOC.	a. Classroom	a. Describe the symptoms of each of the phases of incapacitation. b. Explain the impact of relative incapacitation on the total time required to regain control of the aircraft after G-LOC.
c. Know the methods used to help prevent G-LOC.	a. Classroom	a. Review methods to increase G tolerance. b. Describe the elements involved in correctly performing the Anti-G Straining Maneuver (AGSM).
d. Know the common errors in performing the AGSM.	a. Classroom	a. List errors involved in performing the AGSM. b. Detail common mission characteristics that are likely to cause AGSM errors.
e. Know the characteristics of the methods used to increase a crewmember's tolerance to positive G-forces.	a. Classroom	a. Describe physiological factors related to increased performance in a positive G force environment. b. Recognize the role self-imposed stressors play in decreasing G force tolerance.

Section I — Refresher/Continuation Practical/Device Training Standards (CTS)

The following table defines the course training standards:

Performance	Conditions	Standards
1. Type 4/5 Refresher Altitude Chamber Flight *Prerequisites: APR302, APR303, APR307*		
a. Given proper aviation equipment and an altitude chamber, students will apply previously taught academic principles in a controlled low-pressure environment.	a. Altitude Chamber	a. Recognize and treat symptoms of hypoxia without the physical assistance of an inside observer. **Note:** Physical assistance is defined as physically placing the mask on the student's face, or physically providing max oxygen under pressure. b. Discuss conditions, which could produce hypocapnia and corrective procedures. c. Counteract mechanical effects of pressure change in ears, sinuses, and gastrointestinal tract. d. Recognition of the loss of cabin pressurization, factors affecting the severity of the decompression, the physical and physiological responses present, and the proper response to these occurrences. e. Use proper positive pressure breathing techniques. f. Perform appropriate in-flight checks of oxygen equipment. g. Recognize visual degradation that results from decreased oxygen/increased cabin altitude during night operations conditions. h. Demonstrate proper use emergency / portable oxygen equipment. i. Instilling proper habit patterns, to include proper wear of aircrew flight equipment. Instilling and enhancing confidence in aircrew flight equipment. **Note:** Instructors will ensure that students wear their aircrew flight equipment and flight clothing properly (to the greatest extent possible). j. Identify objective hypoxia signs during hypoxia practical.

		Special Instructions: a. Students who fail to recognize and recover from hypoxia symptoms without the physical assistance of an inside observer may receive a debrief (APOs will use video footage if available) that focuses on observing the importance hypoxia recognition and recovery. Where discipline and motivation issues are present, an APO may direct the student to re-accomplish training at another date. b. If an ROBD is available, the student may accomplish an ROBD experience if the remedial training is specific to hypoxia recognition and recovery.
2. Reduced Oxygen Breathing Device *Prerequisites: APR302, APR303, APR307*		
a. Given proper aviation equipment students will apply previously taught academic principles in a controlled normobaric, reduced oxygen environment. This should also include discussions on recovery actions during hypocapnia episodes.	a. ROBD	a. Recognize and treat symptoms of hypoxia without the physical assistance of the observer. **Note:** For ROBD operations physical assistance is defined as selecting "Oxygen Dump" without the student first accomplishing a recovery action such as gang-loading or pulling the green apple. b. Familiarize students with how hypoxia negatively affects the accomplishment of flight/jump related duties. c. Recognize symptoms of hypoxia at 25,000. d. Familiarize students with visual degradation affects, which result from decreased oxygen during night operations. e. Demonstrate proper use emergency / portable oxygen equipment. f. Identify hypoxia signs through a post-ROBD debrief. Note: Debriefs will be accomplished by a qualified person IAW AFMAN 11-403 who served as the instructor-observer (I/O) for the ROBD training.
		Special Instructions: a. Students who fail to recognize and recover from hypoxia symptoms without the physical assistance of an inside observer may receive a debrief (APOs will use video footage if available) that focuses on observing the importance hypoxia recognition and recovery. Where discipline and motivation issues are present, an APO may direct the student to re-accomplish training at another date.

Chapter 3

Academic Training

Section A General Instructions

1. **Overview**

This chapter presents an overview of the material to be covered in each academic module of instruction. Consistent with student training and sound management, the actual academic sequence may vary to meet local requirements. Students must complete all appropriate prerequisites prior to accomplishing events in a training device.

Section B –Academic Training

1. **Initial Physiology Training**

   a. Night Vision Lab prerequisites: AP01C.

   b. Barany chair training prerequisite: AP01E.

   c. Initial physiology training altitude chamber prerequisites: AP01B, AP01H, AP01C, AP01Q AP01K

   d. Initial physiology training rapid decompression prerequisites: AP05L

   e. The Final Examination will be scheduled after Day 2 of training is complete.

Lesson	***Title***	***Medium***	***Hours***
	Initial Physiology Training (S-O-B/A-APH-I)		
AP01A	Introduction to Human Factors	IBT	0.5
AP01B	Physiological Effects of Altitude	IBT	1.5
AP01C	Vision	IBT	1.0
AP01D	Attention Management Threats to Situational Awareness	IBT	1.0
AP01E	Spatial Disorientation	IBT	1.0
AP01F	Acceleration ***(Note 3)***	IBT	1.0
AP01G	Performance Threats	IBT	1.5
AP01H	Cabin Pressurization and Decompression	IBT	0.5
AP01I	Noise and Vibration	IBT	0.5
AP01J	Physiological Considerations of Aircraft Egress	IBT	0.5
AP01K	Physiological Considerations of Aircrew Flight Equipment/Lab	IBT/UTD	1.5
AP01O	Barany Chair/SD Demonstrator ***(Notes 1 and 2)***	UTD	0.5
AP01Q	Night Vision Lab	UTD	0.5
AP05L	Initial Altitude Chamber Flight ***(Note 1)***	UTD	1.5
AP05M	Rapid Decompression Altitude Chamber Flight ***(Note 1)***	UTD	0.5
AP01S	**Final Examination**	IBT	1.0
		Total	**14.5**

Notes

1. Training time will vary based on device capacity and number of students to be trained.
2. Instructor will demonstrate three illusions using the Barany chair or spatial disorientation trainer using students as volunteers.
3. Required only for personnel flying in high-G aircraft.

IBT—Instructor Based Training
UTD—Unit Training Device

2. **Initial Parachutist Physiology Training**
   a. Night Vision Lab prerequisites: AP01C.
   b. Initial parachutist chamber prerequisites: APHI21C, APHI22D, APHI21E, APHI21F, APHI21H
   c. Initial parachutist rapid decompression prerequisites: APHI21I
   d. The Final Examination will be scheduled after Day 1 of training is complete.

Lesson	*Title*	*Medium*	*Hours*
	Initial Parachutist Physiology Training (S-O-B/A-APH-I)		
APHI21B	Attention Management Threats to Situational Awareness	IBT	1.0
APHI21C	Physiological Effects of Altitude	IBT	1.5
APHI22D	Cabin Pressurization and Decompression	IBT	0.5
APHI21E	Vision	IBT	0.5
APHI21F	Night Vision Lab	UTD	0.5
APHI21G	Performance Threats (includes Noise and Vibration)	IBT	1.0
APHI21H	Physiological Considerations of Parachutist Oxygen Equipment and Lab	IBT	1.0
APHI21I	Type 3 Altitude Chamber Flight ***(Note 1)***	UTD	1.5
APHI10J	Type 2 Altitude Chamber Flight ***(Note 1)***	UTD	0.5
APHI21K	Final Examination	IBT	1.0
Notes 1. Training time will vary based on device capacity and number of students to be trained. IBT—Instructor Based Training UTD—Unit Training Device		***Total***	**9.0**

3. **Refresher Physiology Training**
   a. Refresher altitude chamber training prerequisites: APR302, APR303. APR307
   b. Reduced Oxygen Breathing Device (ROBD) prerequisites: APR302, APR303.
   c. Refresher students from separate training tracks may be combined if respective Track training objectives are comprehensively met. For example, Track A students scheduled to attend a Track T course must receive Acceleration and Mishap examples specific to their weapon systems.

Lesson	*Title*	*Medium*	*Hours*
	Refresher Training (S-O-B/A-APH-R)		
APR301	Attention Management Threats to Situational Awareness	IBT	1.0
APR302	Physiological Effects of Altitude	IBT	0.5
APR303	Vision ***(Note 1)***	IBT	0.5
APR304	Spatial Disorientation ***(Note 2)***	IBT	0.5
APR305	Performance Threats ***(Note 1)*** / Noise and Vibration ***(Note 1)***	IBT	0.75
APR306	Acceleration ***(Note 3)***	IBT	0.5
APR307	Physiological Considerations of Aircrew Flight Equipment (Pre-Flight Brief) ***(Note 1)***	IBT	0.5
APR308 /309	Type 4/5 Refresher Altitude Chamber Flight ***(Notes 1 & 5)*** or Reduced Oxygen Breathing Device (ROBD) ***(Notes 4 & 5)***	UTD	1.0/ 0.5
Notes		***Total***	**5.25/ 4.75**

1. Not required for Track E.
2. Not required for Track J.
3. Required only for personnel flying in high-G aircraft.
4. Not required but highly encouraged for Track E if device is available.
5. These training device lesson hours are per student. Training schedule time must compensate for training device capacity and size of training class.

IBT—Instructor Based Training UTD—Unit Training Device

Chapter 4

Device Training

Section A — Altitude Chamber Operating Instructions

1. **Overview and Description.**

The altitude chamber uses a vacuum pump based system to replicate the effects of barometric pressure change on the human body. The maximum number of students on a chamber flight is the maximum number designed to be held by the main chamber for initial or refresher profiles. The maximum number of students on a rapid decompression flight is the maximum number designed for the lock compartment.

2. **Initial Physiology Training Chamber Flight Profiles**

TYPE 1 INITIAL ALTITUDE CHAMBER FLIGHT
Special Instructions: 1. Students who fail to recover from hypoxia without the physical assistance of an inside observer may receive a debrief (APOs will use video footage if available) that focuses on observing the importance hypoxia recognition and recovery. Where discipline and motivation issues are present, an APO may direct the student to reaccomplish training at another date. 2. If an ROBD is available, the student may accomplish an ROBD experience if the remedial training is specific to hypoxia recognition and recovery.

a. Type 1 Initial Altitude Chamber Flight Procedures. At a minimum, the following procedures will be followed for each altitude chamber flight:

(1) Pre-flight Briefing. Instructor will explain the purpose and procedures of the flight to all students before performing the main flight. The instructor must also explain why, in pressurized aircraft, the oxygen is regulated with the *diluter* setting on "Normal" unless conditions of the flight dictate the use of 100% oxygen. Use chamber time for training activities only.

(2) During mask fitting, preflight check of oxygen equipment, and intercommunication check, have students don oxygen masks with regulator set at "100- percent oxygen."

(3) Ensure that 30 minutes of denitrogenation have been completed before beginning climb to altitudes above 18,000 feet.

(4) Climb to FL250 at 5,000 feet per minute, discuss decompression phenomena using training aids to demonstrate mechanisms. Demonstrate and practice using oxygen regulators. Practice pressure breathing by selecting emergency pressure.

(5) At FL250, one side of the chamber will experience hypoxia first while the other side observes, then vice versa. Students will demonstrate emergency corrective procedures.

(6) Descend to FL180 at 5,000 feet per minute, have students remove masks at FL220 and experience mild hypoxia. Five-minute time hack for night visual acuity demonstration starts upon having students remove their masks.

(7) At FL180, use visual test cards to demonstrate effect of hypoxia on night visual acuity. Once demonstration is complete, resume breathing "100% Oxygen" and check all students.

(8) Descend to ground level at no greater than 5,000 feet per minute, demonstrate low pressure and high-pressure emergency oxygen systems.

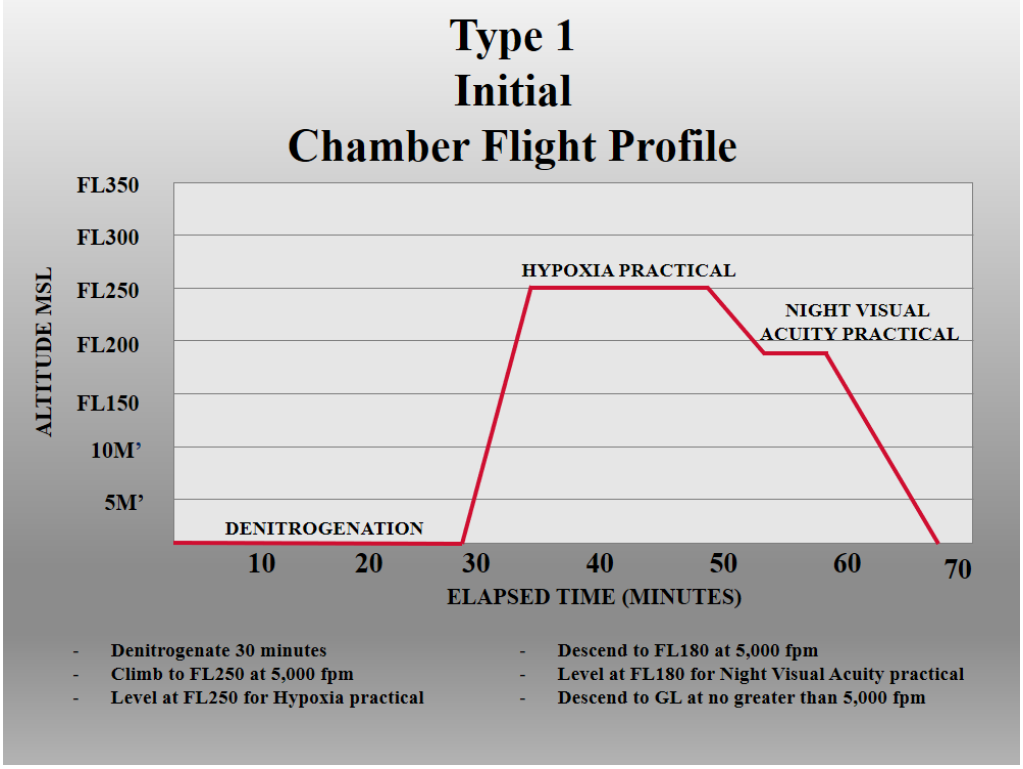
(9) Discuss the need for ventilating middle ears after flights using oxygen. Review problems of rapid decompression.

(10) At ground level, demonstrate the use/recharging of the portable oxygen bottle and potential hazards associated with its use and recharging.

(11) Review flight and quiz students.

(12) Post-flight Briefing. Review the chamber flight to emphasize learning outcomes. Give the students instructions to follow in case they experience a delayed reaction. Brief them on restrictions following chamber flights.

(13) Type 1 Initial Altitude Chamber Flight Profile:



b. Type 2 Rapid Decompression Altitude Chamber Flight. At a minimum, the following procedures will be followed for each rapid decompression chamber flight:

(1) Pre-flight Briefing. Inform students of the purpose of and procedures for the flight.

(2) During mask fitting, preflight check of oxygen equipment, and intercommunication check, students will don oxygen masks with regulator set at "100 percent oxygen."

(3) Divide students into appropriate groups in preparation for the rapid decompression flights.

(4) Set the main chamber at the altitude determined to achieve a 4.5 psi rapid decompression for the field elevation while the inside observer seats the students in the lock compartment.

(5) Direct the students to preflight their oxygen equipment and complete a communication check: student's name and seat number. If possible, the students should wear the same type of mask they will use during aircraft flight and should wear the masks as they do during routine flight. Masks will be worn in the closest configuration realistic to their MDS.

(6) Climb to 500 feet above field elevation or until a good door seal is achieved. Discuss indications of a rapid decompression and proper rapid decompression recovery procedures.

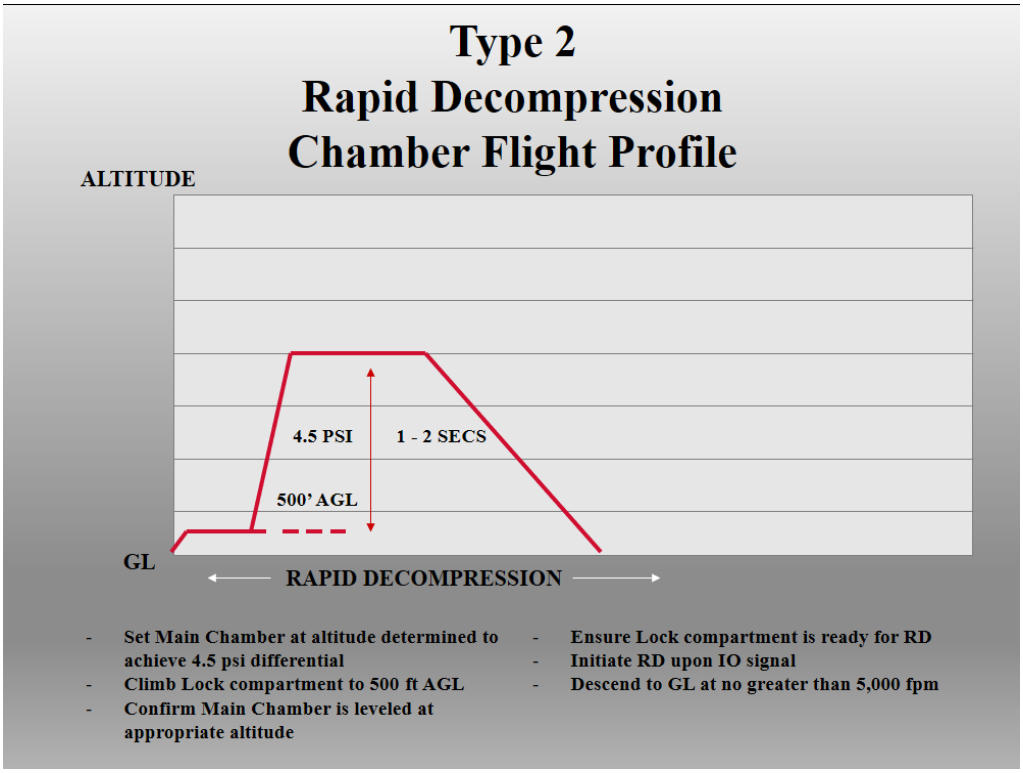
(7) Inside observer signals the lock operator to fire the rapid decompression.

(8) Lock observer monitors student recovery procedures and corrects, if necessary, then directs lock operator to descend to ground level.

(9) Inside observer reviews procedures for preventing/treating ear and sinus blocks and reviews effects of decompression.

(10) Post-flight Briefing. Review the chamber flight to emphasize learning outcomes. Give the students instructions to follow in case they experience any type of delayed reactions. Brief them on restrictions following chamber flights.

(11) Rapid Decompression Altitude Chamber Flight Profile:



3. **Initial Parachutist Physiology Training Chamber Flight Profiles**

TYPE 3 INITIAL PARACHUTIST ALTITUDE CHAMBER FLIGHT
Special Instructions: 1. Students who fail to recognize and recover from hypoxia symptoms without the physical assistance of an inside observer may receive a debrief (APOs will use video footage if available) that focuses on observing the importance hypoxia recognition and recovery. Where discipline and motivation issues are present, an APO may direct the student to re-accomplish training at another date. 2. If an ROBD is available, the student may accomplish an ROBD experience if the remedial training is specific to hypoxia recognition and recovery.

a. Type 3 Initial Parachutist Altitude Chamber Flight Procedures. At a minimum, the following procedures will be followed for each altitude chamber flight:

(1) Pre-flight Briefing. Instructor will explain the purpose and procedures of the flight to all students before performing the main flight. The instructor must also explain why, in pressurized aircraft, the oxygen is regulated with the *diluter* setting on "Normal" unless conditions of the flight dictate the use of 100% oxygen. Initial parachutist trainees may use their parachutist oxygen equipment if it is compatible with the chamber system and this flight profile.

(2) During mask fitting, preflight check of oxygen equipment, and intercommunication check, have students don oxygen masks with regulator set at "100- percent oxygen."

(3) Ensure that 30 minutes of denitrogenation have been completed before beginning climb to altitudes above 18,000 feet.

(4) Climb to FL180 at a rate of 5,000 fpm, discuss decompression phenomena and gas expansion using training aids to demonstrate mechanisms. Demonstrate and practice using oxygen regulators.

(5) Trainees make a freefall or rapid descent (10,000 feet per minute) from FL180 to 8,000 ft.

(6) At 8,000 feet, all trainees will drop their masks as the chamber is taken at maximum vacuum to FL250. During climb and subsequent time at FL250, students experience hypoxia within the limits of useful consciousness. Students resume breathing oxygen and are confirmed to be fully recovered before starting descent.

(7) Descend to FL180 at 5,000 feet per minute, have students remove masks at FL220 and experience mild hypoxia. Five-minute time hack for night visual acuity demonstration starts upon having students remove their masks.

(8) At FL180, use visual test cards to demonstrate effect of hypoxia on night visual acuity. Once demonstration is complete, resume breathing "100% Oxygen" and check all students.

(9) Descend to ground level at no greater than 5,000 fpm while practicing use of parachutist's oxygen equipment as available.

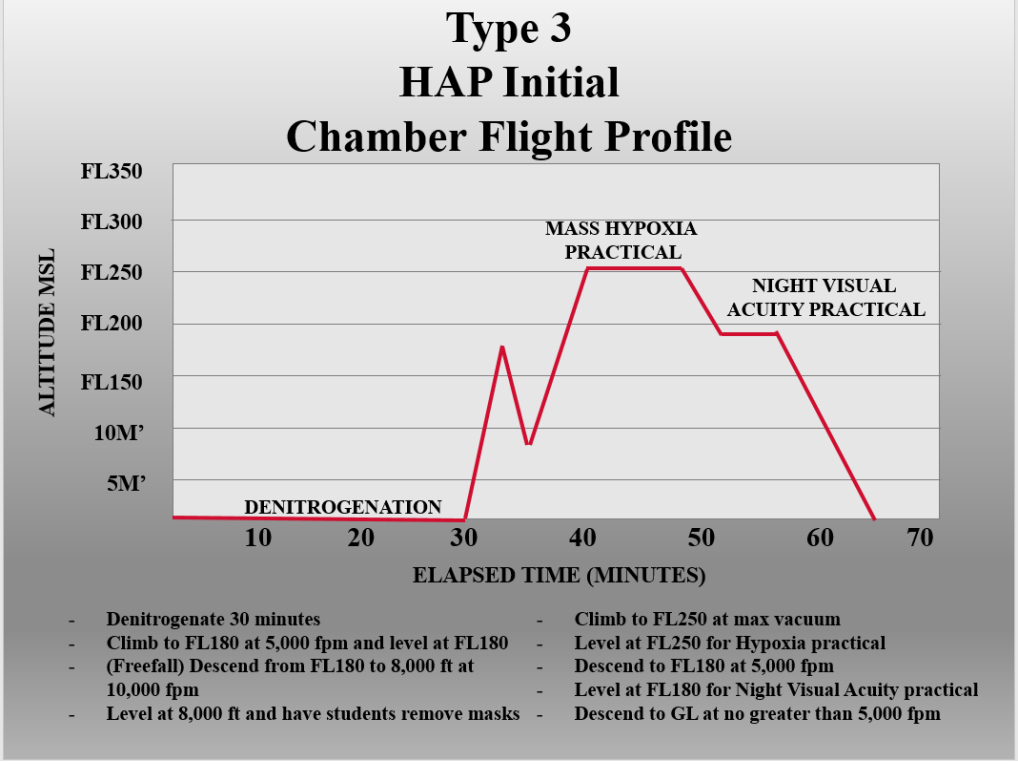
(10) Practice using portable oxygen equipment as appropriate during the chamber flight. Discuss problems of rapid decompression.

(11) Discuss the need for ventilating middle ears after flights using oxygen. Review problems of rapid decompression.

(12) Review flight and quiz students.

(13) Post-flight Briefing. Review the chamber flight to emphasize learning outcomes. Give the students instructions to follow in case they experience a delayed reaction. Brief them on restrictions following chamber flights.

(14) Type 3 Initial Parachutist Chamber Flight Profile:



b. Type 2 Rapid Decompression Altitude Chamber Flight.

(1) Follow instructions under "Initial Physiology Training Chamber Flight Profiles."

4. **Refresher Physiology Training Chamber Flight Profile (Tracks A/J/T)**

TYPE 4 (TRACKS A/J/T) REFRESHER ALTITUDE CHAMBER FLIGHT
Special Instructions: 1. Students who fail to recognize and recover from hypoxia symptoms without the physical assistance of an inside observer may receive a debrief (APOs will use video footage if available) that focuses on observing the importance hypoxia recognition and recovery. Where discipline and motivation issues are present, an APO may direct the student to re-accomplish training at another date. 2. If an ROBD is available, the student may accomplish an ROBD experience if the remedial training is specific to hypoxia recognition and recovery.

a. Type 4 Refresher Altitude Chamber Procedures. At a minimum, the following procedures will be followed for each refresher chamber flight:

(1) Pre-flight Briefing. Instructor will explain the purpose and procedures of the flight to all students before performing the main flight. The instructor must also explain why, in pressurized aircraft, the oxygen is regulated with the setting on "Normal" unless conditions of the flight dictate the use of 100 percent oxygen. Use 100 percent oxygen up to 8,000 feet where the masks are removed for the rapid climb to FL250 and the hypoxia demonstration.

(2) During mask fitting, preflight check of oxygen equipment, and intercommunication check, students will don oxygen masks with regulator set at 100 percent oxygen.

(3) Climb and descent rates are as follows: climb to 8,000 feet at 5,000 feet per minute; 8,000 feet to FL250 at maximum vacuum; descent from FL250 to FL180 at 5,000 feet per minute; descent from FL180 feet to ground level at no greater than 5,000 feet per minute. The flight profile is conducted using altitudes in MSL.

(4) Ensure that 30 minutes of denitrogenation have been completed before reaching 8,000 feet in preparation for the hypoxia demonstration. During pre-breathing period, have students experience pressure breathing by using the narrow panel regulator in the EMERGENCY and the TEST MASK positions.

(5) During climb to 8,000 feet and on to FL250, discuss decompression phenomena using training aids to demonstrate mechanisms. Demonstrate and practice using the oxygen regulators.

(6) At 8,000 feet, the track T students desiring to use a quick don oxygen mask system will make the transition to this system if available.

(7) After the oxygen systems have been switched off and the communication with the students is rechecked, all students will drop their masks as the chamber is taken at maximum vacuum to FL250. During climb and subsequent time at FL250, students experience hypoxia within the limits of useful consciousness. Students resume breathing oxygen and are confirmed to be fully recovered before starting descent.

(8) During descent to FL180, have students remove masks at FL220 and experience mild hypoxia. Five-minute time hack for night visual acuity starts upon having students remove masks.

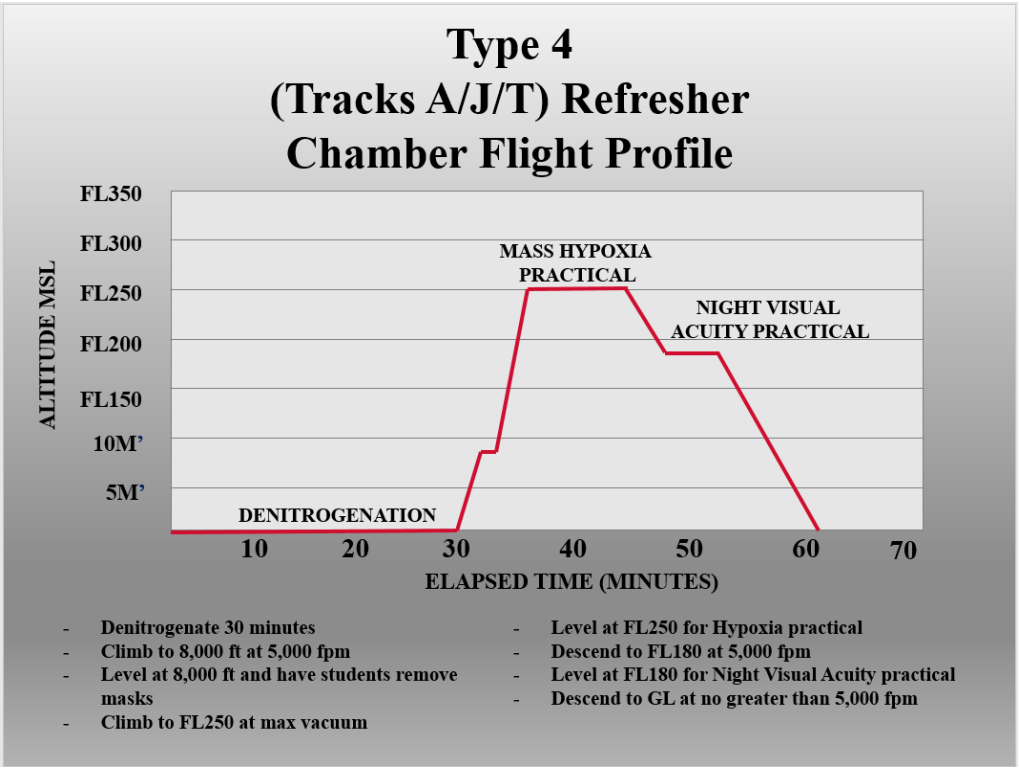
(9) At 18,000 feet, use visual aids to demonstrate effects of hypoxia on night visual acuity. Students resume breathing oxygen and are confirmed to be fully recovered before starting descent.

(10) Practice using emergency and/or portable oxygen equipment as appropriate during the chamber flight. If pressure breathing was not demonstrated earlier, use portable oxygen equipment to practice breathing techniques using higher breathing pressures and review walk-around cylinder recharging. Discuss the need for ventilating middle ears after flights using oxygen. Discuss problems of rapid decompression.

(11) Review flight and answer student questions.

(1) Post-flight Briefing. Same as Type 3 Initial Parachutist Chamber flight.

(2) Type 4 Refresher Altitude Chamber Flight profiles:



5. **Refresher Physiology Training Flight Profile (Track H)**

***TYPE 5 (TRACK H) REFRESHER ALTITUDE CHAMBER FLIGHT**
Special Instructions: 1. Students who fail to recognize and recover from hypoxia symptoms without the physical assistance of an inside observer may receive a debrief (APOs will use video footage if available) that focuses on observing the importance hypoxia recognition and recovery. Where discipline and motivation issues are present, an APO may direct the student to re-accomplish training at another date. 2. If an ROBD is available, the student may accomplish an ROBD experience if the remedial training is specific to hypoxia recognition and recovery. **Note: Track H aircrew may complete Type 4 or 5 Altitude Chamber profile.**

a. Type 5 (Track H) Refresher Altitude Chamber Procedures. At a minimum, the following procedures will be followed for each refresher chamber flight:

(1) Pre-flight Briefing. Instructor will explain the purpose and procedures of the flight to all students before performing the main flight. Students breathe ambient air (mask down) up to 17,500 feet. The entire climb is used to facilitate the hypoxia demonstration.

(2) During mask fitting, preflight check of oxygen equipment, and intercommunication check, students will don oxygen masks with regulator set at 100 percent oxygen to ensure a seal.

(3) Climb and descent rates are as follows: climb to 17,500 feet at no greater than 5,000 feet per minute; descent from 17,500 feet to ground level at no greater than 5,000 feet per minute. The flight profile is conducted using altitudes in MSL.

(4) During climb to 17,500 feet, discuss decompression phenomena using training aids to demonstrate mechanisms. Discuss differences in hypoxia symptoms for mild hypoxia versus severe hypoxia. Emphasize the insidious nature of mild hypoxia symptoms for rotary wing aircrew.

(5) During climb and subsequent time at 17,500 feet, students experience hypoxia within the limits of useful consciousness. At 30 minutes after passing through 10,000 feet MSL, direct all trainees who have not already donned oxygen equipment and corrected for hypoxia to do so. Trainees resume breathing oxygen and are confirmed to be fully recovered before starting next demonstration. Any trainee that did not receive symptoms of hypoxia the APO will ensure they receive ROBD hypoxia practical.

(6) While remaining at 17,500 feet, have trainees remove masks and experience mild hypoxia in preparation for visual acuity demonstration. Trainees must stay below 18,000 feet since they did not complete denitrogenation.

(7) Have students remove masks at 17,500 feet and experience mild hypoxia. Five-minute time hack for night visual acuity starts upon having students remove masks.

(8) Use visual aids to demonstrate effects of hypoxia on night visual acuity. Students resume breathing oxygen and are confirmed to be fully recovered before starting descent.

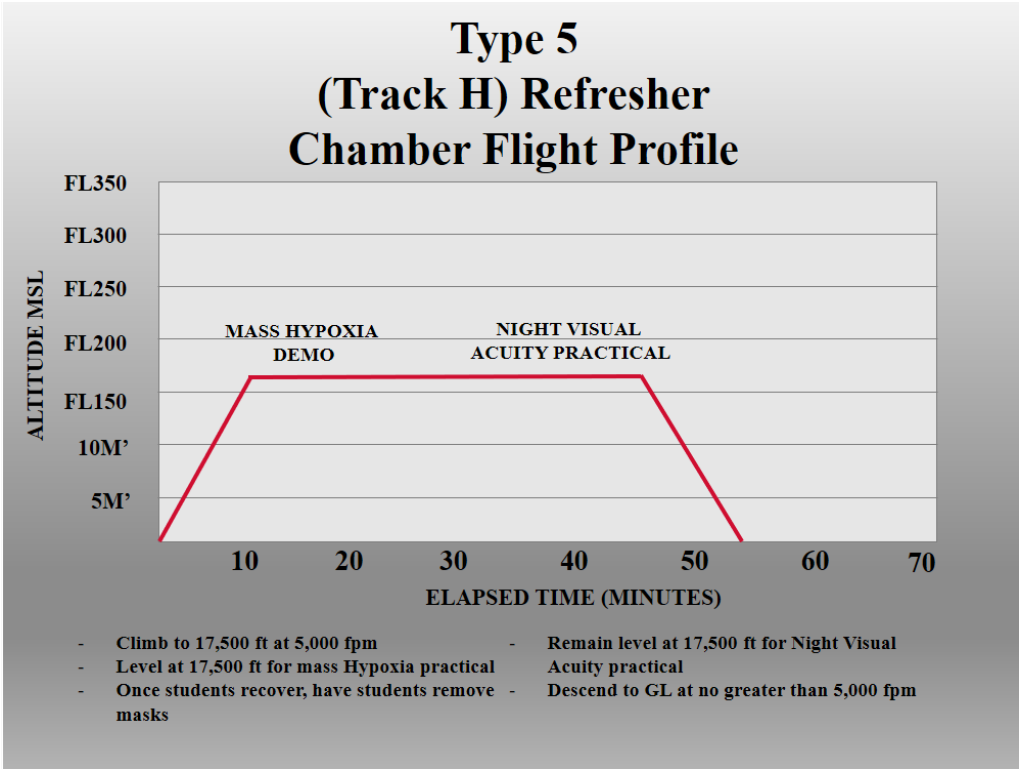
(9) Descend to 10,000 feet while breathing oxygen on "Normal Oxygen" setting. Upon descent below 10,000 feet, oxygen masks may be disconnected, and descent continued to ground level breathing air.

(10) Practice using emergency and/or portable oxygen equipment as appropriate during the chamber flight. If pressure breathing was not demonstrated earlier, use portable oxygen equipment to practice breathing techniques using higher breathing pressures and review walk-around cylinder recharging. Discuss the need for ventilating middle ears after flights using oxygen.

(11) Review flight and answer student questions.

(12) Post-flight Briefing. Same as Type 3 Initial Parachutist Chamber flight.

(13) Type 5 Refresher Altitude Chamber Flight profile:



Section B — Reduced Oxygen Breathing Device & complimentary trainers

REDUCED OXYGEN BREATHING DEVICE
Special Instructions: 1. Training must be executed IAW host wing OG-approved ROBD training plan.

1. **Reduced Oxygen Breathing Device Operating Instructions.**

a. ROBD Training and Operating Procedures.

(a) ROBD training profiles can mimic the altitude chamber profiles and programmed for a 25,000-foot hypoxia demonstration and an 18,000-foot night vision demonstration. MAJCOM/A3 may deviate from these altitudes based on MDS-specific training requirements but must accomplish both demonstrations.

(b) All ROBD training will use approved aircrew flight equipment. When possible, oxygen panel should be configured per the aircraft technical order.

(c) Aircraft flight simulator scenarios and HFT profiles used with the ROBD shall meet the training objectives outlined in this syllabus and should be relevant to the wing flying mission and aircraft characteristics.

(d) Hypoxia Recognition and Recovery Training. ROBD training profile altitude shall not exceed 25,000 feet for longer than 10 minutes. A blood oxygen saturation drop below 65% is not restrictive, but does require increased vigilance in student monitoring by the ROBD instructor. Climb rates will not exceed 12,000 feet per minute. Activate 100% oxygen via the Oxygen Dump when student initiates corrective procedures.

(e) Unaided Night Vision Hypoxia Demonstration. Students must be given something to monitor that will most effectively demonstrate the effects of low-level hypoxia on vision. A nighttime HFT scene can be used, as can a navigation chart. The most effective training aid is one with numerous, disparate colors; for example, the color wheel used in chamber training. Profile will climb to 18,000 feet in as dark an environment as possible. Student oxygen saturation will be monitored and ROBD will be manually adjusted to achieve saturation between 80-85%. Once saturation enters this range, start a timer and continue adjusting ROBD altitude as required to keep student in this range for five minutes. Night vision demonstration altitude shall not exceed 18,000 feet for longer than 10 minutes. Night vision demonstration will be accomplished as a separate training objective from the Hypoxia Recognition and Recovery but should be provided during the same training event.

(f) Instructor observer (I/O) should consider the effect of repeated hypoxia exposure on training benefit and fatigue affects before allowing a third attempt at any hypoxia-training objective during a training day.

(g) The ROBD training session shall be terminated if the student loses consciousness or becomes incoherent and incapable of performing emergency procedures. Subsequent flights may be performed, but only after the student has recovered fully (i.e., absence of symptoms and blood oxygen saturation greater than 95%) and, in the case of unconsciousness, the flight surgeon has been consulted.

(h) Any time a training session needs to be terminated while a low-oxygen gas mixture is being delivered, use 100% oxygen via the Oxygen Dump switch to terminate the training profile.

2. **Hypoxia Familiarization Trainer Operating Instructions.**

a. **Overview.** The HFT can be used in conjunction with the ROBD to train aircraft- specific hypoxia emergency procedures. The HFT in conjunction with the ROBD is an approved aircrew training system alternative to the altitude chamber for refresher physiological training requirements. Two configurations are available, the HFT-C for cockpit crew, and the HFT-M for mission crew. For simplicity, this syllabus refers to both using the term HFT. Each configuration's specifics for operation are detailed in the appropriate training plan.

b. **Description.** The HFT components are the main chassis and I/O station. The main chassis emulates a generic aircraft cockpit. It has simulated flight controls and other panels a student uses to perform simulated flight duties and mask-on hypoxia recognition and recovery procedures. The I/O station is a commercial frame/enclosure that interfaces with the main chassis and contains the ROBD and other equipment/components for conducting and controlling training scenarios. The HFT is used to train aircrew to recognize and properly respond to the effects of hypoxia while performing simulated flight duties. The training replicates environmental conditions similar to those experienced by aircrew during high altitude missions.

3. **Parachute Operations Hypoxia Familiarization Trainer Operating Instructions.**

a. **Overview.** The POHFT is used in conjunction with the ROBD to train military freefall specific hypoxia emergency procedures. The POHFT in conjunction with the ROBD is an approved aircrew training system alternative to the altitude chamber for Track J refresher physiological training requirements.

b. **Description.** The POHFT consists of the platform, cargo seat, night vision trainer, and monitor. The main platform emulates a generic cargo aircraft. A student uses the POHFT to perform mask-on hypoxia recognition and recovery procedures from induced hypoxic events. The I/O station is an enclosed commercial frame that interfaces with the main chassis and contains the ROBD and other equipment/components for conducting and controlling training scenarios. The POHFT is used to train parachutists to recognize and properly respond to the effects of hypoxia while performing simulated jump duties. The training replicates environmental conditions similar to those experienced by jumpers during high altitude airdrop missions.

Section C — Barany Chair/Spatial Disorientation Demo

1. **Overview.**
The Barany chair is a rotational seating device used to generate a response to motion within the vestibular system. Disorientation training can be accomplished using several trainers and demonstrations. The Barany chair is used to provide students with an understanding of the vestibular system's susceptibility to error.

2. **Objectives and Demonstrations.**
Vestibulocular reflexes and somatogyral/oculogyral illusions can be demonstrated via the Barany chair by limiting additional orientation information from the visual or auditory systems. Instructors may direct various positioning causing an increased reaction in students and providing a notable effect on the student's ability to interpret their orientation in space.

3. **Preflight Briefing.**
Students will receive academic instruction on spatial disorientation prior to training. Each student will be briefed on safety prior to Barany chair demonstration. This requirement may be met with a general brief to the class when the training session begins. Specific instructions for executing each maneuver will be briefed to students as each maneuver begins; there is no requirement for this information to be reviewed in a pre-brief.

4. **Spatial Disorientation Familiarization Training Demonstrations:**

a. **Graveyard Spin/Spiral.** Incorrect perception of rotational direction or non-perception of rotation.

b. **Nystagmus.** Involuntary eye movement in relationship to fluid movement in the inner ear.

c. **Coriolis.** Tumbling sensation due to coupling of multiple activated semi-circular canals.

Coriolis Demonstration Orientation and Student Effects.

Demo Orientation	Effect
Head Right, Spun Right (clockwise)	Front Right Tumble
Head Right, Spun Left (counterclockwise)	Front Left Tumble
Head Left, Spun Right (clockwise)	Back Left Tumble
Head Left Spun Left (counterclockwise)	Back Right Tumble

5. **Post Flight Brief/Post Training Review.**
Ensure students understand the physiological cause for the illusion demonstrated and the illusion's relevance to aviation operations.

Section D — Night Vision Lab w/Unaided Night Vision Trainer

NIGHT VISION LAB W/UNAIDED NIGHT VISION TRAINER
Special Instructions: 1. Refer to AP Lead Command SharePoint page for additional unaided night vision trainer operating instructions.

1. **Overview.**
The unaided night vision trainer is a device that is used in a classroom to simulate the low-light environment encountered in night flying operations.

2. **Description.**
The trainer can replicate a range of scenarios including totally darkened, lights-out environment to that of a dark-adapted individual.

3. **Demonstration.**
The unaided night vision trainer can demonstrate how dark adaptation and various cockpit lighting may enhance unaided night vision. Anomalies, to include autokinesis and flash blindness may be demonstrated with this device. The unaided night vision trainer may enhance the student's ability to understand night vision threats and emphasizes measures to enhance situational awareness at night.

Chapter 5

General Instructions

Section A — General Instructions

1. **Scheduling and Training**

a. AP device training is designed to establish and reinforce student confidence in the performance of aircrew emergency procedures. The devices simulate real world scenarios that allow students to experience physiological limitations in a controlled environment. Students must complete all appropriate prerequisites prior to participating in device training events. All training device tasks must be successfully accomplished to fulfill course completion requirements.

b. Instructors are responsible for student safety at all times. Emphasis must be placed on emergency procedures, discipline, professionalism, and good judgment. When simulating emergencies or correcting student errors, instructors will not compromise safety.

c. Students are required to monitor their training progress and complete objectives; however, instructors are responsible for training accomplishment.

2. **Definitions**

d. **Prerequisites—**List all prerequisites which must be successfully completed prior to the training device.

e. **Objectives—**Contain training requirements for tasks and overall requirements.

f. **Tasks—**Indicate minimum required tasks for the training device.

g. **Special Instructions—**Clarify management to achieve objectives.

Section B — Bibliography

1. Aerospace Physiology students may reference training materials that are available for review on military Web sites. When students need these publications, the AF Publications Web site located at http://www.e-publishing.af.mil/. Paragraph 2 lists publications students occasionally use.

2. Training materials available for review on military Web sites.

a. AFMAN 11-202V1, *Aircrew Training*

b. AFMAN 11-202V3, *Flight Operations*

c. AFMAN 11-290, *Cockpit/Crew Resource Management and Threat & Error Management Program*

d. AFMAN 11-301V1, *Aircrew Flight Equipment (AFE)*

e. DAFMAN 11-401, *Aviation Management*

f. AFMAN 11-403, *Aerospace Physiological Training Program*

g. AFMAN 11-404, *Fighter Aircrew Acceleration Training Program*

h. AFMAN 11-409, *High Altitude Airdrop Mission Support Capability Program*

i. AFI 16-1301, *Survival, Evasion, Resistance, and Escape (SERE) Program*

j. DAFMAN 36-2905, *Department of the Air Force Physical Fitness Program*

k. AFI 48-101, *Aerospace Medicine Enterprise*

l. DAFMAN 48-123, *Medical Examinations and Standards*

3. Courseware is considered Scientific and Technical Information (STINFO) and will be managed IAW DOD policy, DAFI 61-201, and AFI 11-215, AETC Sup.

4. Access to courseware associated with this publication is restricted. Refer requests for this document to the OPR.

5. Direct any questions regarding this guidance to 19 AF/A3OA.

Section C— Glossary

Abbreviations and Acronyms

AGSM — Anti-G Straining Maneuver
AP — Aerospace Physiology
APO – Aerospace Physiology Officer
C2ISR — Command Control Intelligence Surveillance Reconnaissance
CTS—Course Training Standards
DCS – Decompression Sickness
DTS – Device Training Standards
FL – Flight Level
G-LOC — G-Induced Loss of Consciousness
HF – Human Factors
HFT – Hypoxia Familiarization Trainer
IBT – Instructor Based Training
IG – Instructor Guide
I/O – Instructor Observer
MDS – Mission Design Series
MFF – Military Freefall
NVG — Night Vision Goggles
OG — Operations Group
OTC – Over the Counter
P.R.I.C.E. — Pressure. Regulator. Indicator. Connections. Emergency.
ROBD — Reduced Oxygen Breathing Device
SD — Spatial Disorientation
SG – Student Guide
UTD – Unit Training Device