Multiple Category Scope and Sequence: Scope and Sequence Report For Course Standards and Objectives, Content, Skills, Vocabulary

Wednesday, August 20, 2014, 2:11PM

	Unit	Course Standards and Objectives	Content	Skills	Vocabulary
District Advanced **Pilot Ground School (District)** 2014-2015 **Readicker, Carl**	**Human Factors, Physiology, Aeronautical Decision** (Week 1, 2 Weeks)	**Private Pilot Standards (3).doc**	**Pilot Training** ▪ Pilot Certifications ▪ Aircraft Category and Class ▪ Role of the FAA ▪ Fixed-Base Operators (FBO) ▪ Eligibility Requirements ▪ Types of Training Avaliable ▪ Phases of Training ▪ Pilot Private Privileges and Limitations **Aviation Opportunities** ▪ New Experiences ▪ Aviation Organizations ▪ Category/Class Ratings ▪ Additional Pilot Certificates ▪ Aviation careers **Introduction to Human Factors and Aviation Physiology** ▪ Situational Awareness ▪ Effects of Alcohol, Drugs, and Over-the-counter-drugs ▪ Fitness for Flight ▪ Hypoxia and Hyperventilation ▪ Middle Ear and Sinus Problems ▪ Spatial Disorientation ▪ Motion Sickness ▪ Carbon Monoxide Poisoning ▪ Stress and Fatigue ▪ Dehydration ▪ Effects of Excess Nitrogen during Scuba Diving **Aeronautical Decision Making and Judgment**	▪ Judge fitness for flight ▪ Distinguish catagory from class ▪ Explain phases of training ▪ Plan aviation pathway ▪ Understand affect drugs and alcohol ▪ Recognize physiological effects	▪ Retina ▪ Cones ▪ Rods ▪ Autokinesis ▪ False Horizon ▪ Landing Illusions ▪ Flicker Vertigo ▪ Disorientation ▪ Kinesthetic Sense ▪ Visual Sense ▪ Spatial Disorientation ▪ Vestibular System ▪ Semicircular Canals ▪ Hypoxia ▪ Pressurization ▪ Decompression

- Crew Resource Management
- Applying the Decision Making Process (DECIDE)
- Situational Awareness
- Pilot in command Responsibility
- Commnunication
- Workload Management

Aircraft components, power plant, systems (Week 3, 2 Weeks)

Private Pilot Standards (3).doc

Aircraft Components

- Primary Flight Controls and Trim
- Landing Gear
- Fuselage
- Pilot's Operating Handbook
- Flaps, Leading Edge Devices and Spoilers
- Landing Gear, Breaks and Steering

The Power Plant and Aircraft Systems

- Main Rotor Designs: Rigid, Semi-Rigid, Fully Articulated
- Anti-Torque Rotor (Tail Rotor)
- Fuel, Oil and Hydraulic System
- Reciprocating engine
- electrical systems
- Environmental
- Induction Systems
- Ignition Systems
- Exhaust systems
- Rotor Hazards
- Drive Train
- Deicing and Anti-icing, Including Carburetor Heat
- Propellers

System and equipment Malfunctions

- Engine Oil and Fuel
- Electrical
- Carburetor or Induction Icing
- Smoke and/or Fire
- Flight Control/Trim
- Rotor and /or Antitorque
- Various Vibration Frequencies
- Loss of Power

- Recognize primary flight controls
- Research operating handbook
- Locate basic flight instruments
- Investigate emergency procedures
- Repeat common terms
- Explain lift theory

- Empennage
- Vertical Stabilizer
- Horizontal Stabilizer
- Rudder
- Elevator
- Trim Tab
- Anti-Servo Tab
- Main Wheels
- Conventional Landing gear
- Tail Wheels
- Tricycle Gear
- Nosewheel
- Fixed Gear
- Powerplane
- Engine
- Firewall
- Propeller

Flight Instruments

- Pitot-Static Instruments
- Airspeed Indicator
- Altimeter
- Vertical Speed Indicator
- Gyroscopic Vacuum Pressure
- Magnetic Compass
- System and Equipment Malfunction

Principles of Aerodynamics (Week 5, 2 Weeks)

Private Pilot Standards (3).doc

Principles of Aerodynamics

- Four Forces of Flight: Lift, Weight, Thrust & Drag
- Airfoils
- Pilot Control of Lift
- Ground Effect

Stability

- Three Axes of Flight
- Center of Pressure & Center of Gravity Position
- Directional Stability
- Stall Awareness,Spin Entry,Spin Entry, Spins, and Spin Recovery Techniques

Aerodynamics of Maneuvering Flight

- Climbing Flight
- Descending Flight
- Turning Flight
- Load Factor
- Hovering Flight

Energy Management and Advanced Helicopter Aerodynamics

- Energy Management
- Autorotative Descent
- Definition of Autorotation
- Free-Wheeling Unit
- Direction of Airflow
- Hovering Autorotation

System and Equipment Malfunctions

- Apply theory of lift to helicopter and fixed wing
- Outline stability
- Assess ground effect
- Differentiate systems
- Plan emergency procedures
- Name helicopter rotor systems

- Maneuverability
- Controllability
- Center of lift
- Thrustline
- CG Range
- Dihedral
- Sweepback
- Keel Effect
- Spin
- Flat Spin
- Stall
- Spin Recovery

- Electrical System Malfunction: Alternator, Battery
- Electrical Fire In Flight
- Fire In Flight
- Warning/Caution Lights
- Tachometer Failure
- Engine Failure
- Tail Rotor Failure

Potential Emergency Flight Conditions

- Dynamic Rollover
- Static Rollover
- Retreating Blade Stall
- Low G Condition
- Low Rotor RPM & Rotor Stall
- Settling with Power
- Safety Notices

Airports, charts, safe operations (Week 7, 2 Weeks)

Private Pilot Standards (3).doc

Safe and Efficient Operations of Aircraft

- Collision Avoidance/Visual Scanning
- Wake Turbulence
- Airport Operations
- Minimum Safe Flight Altitudes
- Taxiing in Wind and Positive Exchange of Controls

Airports

- Controlled and Uncontrolled
- Traffic Pattern
- Airport/Heliport; Runway/Taxiway Signs, Marking and Lighting
- Airport Runway and Taxiway Operations
- Ramp Area Hand Signals
- Runway Incursion Avoidance
- Land and Hold Short Operations
- Airport Lighting
- Approach Light Systems
- Pilot-Controlled Lighting

Aeronautical Charts

- Latitude and Longitude
- Sectional Charts

- Know airport traffic procedures
- Locate runway signs and markings
- Communicate with air traffic
- Distinguish rotating beacons
- Analyze sectional charts
- Conduct before takeoff checklist

- Ramp area
- Runway
- Displaced Threshold
- Tetrahedron
- Taxiway
- Blast Pad
- Hold Lines
- Wind Tee
- Segmented Circle
- (VASI) Visual Approach Slope Indicator
- Airport Beacon
- Hand Signals
- (ALS) Approach Lighting System

		▪ Chart Symbols **National Airspace System** ▪ Basic VFRWeather Minimums ▪ Uncontrolled & Controlled Airspace ▪ Airspace Classes and Operating Rules ▪ Special VFR ▪ Special Use Airspace ▪ Other Airspace Areas ▪ Emergency Air Traffic Rules ▪ ADIZ (Air Defense Identification Zone)		
Radar, ATC, radio procedures (Week 8, 2 Weeks)	**Private Pilot Standards (3).doc**	**Radar and Air Traffic Control Services** ▪ Radar ▪ FAA Radar Systems ▪ VFR Radar Services ▪ Automatic Terminal Information Services (ATIS) ▪ Flight Service Stations ▪ VHF Direction Finder Assistance **Radio Procedures** ▪ Avionics Equipment ▪ VHF Communications Equipment ▪ Phraseology ▪ Coordinated Universal Time (UTC) ▪ Common Traffic Advisory Frequency (CTAF) ▪ ATC Facilities and Controlled Airports ▪ Lost Communication and ATC light Signals ▪ Emergency Procedures ▪ Emergency Equipment/ELT and Survival Gear ▪ **Sources of Flight Information** ▪ Airport/Facility Directory (A/FD) ▪ Federal Aviation Regulations (FAR) ▪ Aeronautical Information Manual (AIM) ▪ Notices to Airman (NOTAMS) ▪ Advisory Circulars (AC)	▪ Interpret weather briefing ▪ Use coordinated universal time ▪ Use airport facility directory ▪ Assess notices to airmen ▪ Draw conclusions to safe outcomes ▪ Collect data from radio communications	▪ Radar ▪ Range ▪ Squawk ▪ Flight Following Terminal Radar Approach Control Facility (TRACON) ▪ Transceivers ▪ N-Number ▪ Zulu Time ▪ (UTC) Coordinated Universal Time ▪ (CTAF) Common Traffic Advisory Frequency ▪ Distress ▪ Urgency ▪ Air Traffic Control (ATC) ▪ NOTAM Notices to Airmen
Regulations (Week 9, 2 Weeks)	**Private Pilot Standards (3).doc**	**Federal Aviation Regulations Part 1, 61, and 91** ▪ Applicable Federal Aviation Regulations for	▪ Classify regulations ▪ Analyze regulations ▪ Interpret regulations	▪ Airport/Facility Directory (AFD) ▪ Aeronautical Information

		Private Pilot Privileges, Limitations and Recent Flight ▪ Medical certificates Class and Duration ▪ Pilot Logbooks and Flight Records ▪ Airworthiness and Resitration Certificates ▪ Operating Limitations, Placards,Instrument Markings, and POH/FM ▪ Required Equipment for daty/night VFR ▪ Operations with and without MEL ▪ Special Flight Permits ▪ Airworthiness Directives ▪ Maintenance/Inspection Requirements ▪ Appropriate Record Keeping ▪ Preflight Action **National Transportation and safety Board (NTSB)** ▪ Rules for Reporting Incidents and Accidents	▪ Explain medical certificate duration ▪ Display an understanding of basic regulations ▪ Use pilots operating handbook	Manual (AIM) ▪ Advisory Circulars (AC) ▪ (FAR's) Federal Aviation Regulations ▪ Abbreviations ▪ FAR's Part 61 ▪ FAR's Part 91 ▪ FAR's Part 1 ▪ FAR's Part 43
Weather,theory, patterns hazards (Week 11, 2 Weeks) **Private Pilot Standards (3).doc**	**Basic Weather Theory** ▪ The Earth's Atmosphere ▪ Atmospheric circulation ▪ Atmospheric Pressure ▪ Coriolis Force ▪ Global Wind Patterns ▪ Local Wind Patterns **Weather Patterns** ▪ Atmospheric Stability ▪ Temperature Inversions ▪ Moisture ▪ Humidity ▪ Dew Point ▪ Clouds and Fog ▪ Precipitation ▪ Air Masses ▪ Fronts **Weather Hazards** ▪ Recognition of Critical Weather Situations ▪ Thunderstorms ▪ Turbulence ▪ Wake Turbulence ▪ Wind Shear Avoidance	▪ Consider go-no go decision ▪ Investigate earth's atmosphere ▪ Develop an understanding of weather ▪ Measure risk ▪ Observe weather patterns ▪ Plan an out to each flight	▪ Atmosphere ▪ Troposphere ▪ Tropopause ▪ Stratosphere ▪ Stratosphere ▪ Circulation ▪ Convection ▪ Isobars ▪ High Pressure ▪ Low Pressure ▪ Ridge ▪ Trough ▪ Coriolis Force ▪ Pressure Gradient ▪ Temperature Inversion ▪ Evaporation ▪ Condensation ▪ Sublimation

- Microburst
- Icing
- Restrictions to Visibility
- Volcanic Ash

Weather sources of information (Week 12, 2 Weeks)

Private Pilot Standards (3).doc

The forecasting Process

- Forecasting Methods
- Types of Forecasts
- Compiling and Processing Weather Data
- Forecasting Accuracy and Limitations

Printed Reports and Forecasts

- Aviation Routine Weather Report (METAR)
- Radar Weather Reports
- Pilot Weather Reports (PIREP)
- Terminal Aerodrome Forecast
- Aviation area Forecast (FA)
- Winds and Temperature Aloft Forecast (FD)
- Severe Weather Reports and Forecasts
- AIRMET/SIGMET/Convective SIGMET

Graphic Weather Products

- Surface Analysis Chart
- Weather Depiction Chart
- Radar Summary Chart
- Satellite Weather Pictures
- Significant Weather Prognostic chart
- Convective Outlook chart
- Forecast Winds and Temperatures Aloft chart
- Volcanic Ash Forecast and Dispersion Chart

Sources of Weather Information

- Preflight Weather Sources
- Automated Weather Reporting Systems
- AWOS,ASOS,and ATIS Reports
- FSS Weather Briefings
- DUATs
- In-Flight Weather Sources
- Enroute Flight Advisory Service
- Weather Radar Services

- Formulate your minimums
- Differentiate weather sources
- Perform a weather check
- Display radar reports
- Measure elements of risk
- Sort different sources of information

- Preflight Weather Briefing
- Standard Briefing
- Abbreviated Briefing
- Outlook Briefing
- Flight Watch
- (ASOS) Automated Surface Observing System
- (AWOS) Automated Weather Observing System
- (EFAS) Enroute Flight Advisory Service

Aircraft performance, weight and balance (Week 14, 2 Weeks)	**Private Pilot Standards (3).doc**	**Perdicting Performance** ▪ Aircraft Performance and Design ▪ Performance Charts, Tables, and data ▪ Atmospheric Conditions Affecting Performance ▪ Density Altitude on Takeoff and climb Performance ▪ Retreating blade Stall ▪ Loss of Tail Rotor Effectiveness ▪ Using Performance Charts ▪ Height/Velocity Diagram **Weight and Balance** ▪ Importance of Weight ▪ Importance of Balance ▪ Weight and Balance Data & Equipment List ▪ Terminology ▪ Principles of Weight and Balance ▪ Computation Method ▪ Table Method ▪ Graph Method ▪ Weight-Shift Formula ▪ Effects of Operating at High Total Weights ▪ Flight at Various CG Positions **Flight Computers** ▪ Mechanical Flight Computers ▪ Performance, Time, and Fule Calculations ▪ Airspeed and Density Altitude Computations ▪ Wind Problems ▪ Conversions ▪ Multi-Part Problems ▪ Electronic Flight computers ▪ Modes and basic Operations	▪ Demonstrate performance chart use ▪ Detect hazardous conditions ▪ Explain density altitude ▪ Use helicopter performance data charts ▪ Consider performance before takeoff ▪ Interpret weight and balance	▪ Performance ▪ Performance Charts ▪ Interpolation ▪ Density Altitude ▪ Hydroplaning ▪ Approach Airspeeds ▪ Center of Gravity (CG) ▪ Reference Datum ▪ Basic Empty Weight ▪ Unusable Fuel ▪ Ramp Weight ▪ Takeoff Weight
Navigation (Week 16, 2 Weeks)	**Private Pilot Standards (3).doc**	**Pilotage and Dead Reckoning/Radio Navigation** ▪ Pilotage ▪ Dead Reckoning ▪ Flight Planning ▪ VFR Cruising Altitudes ▪ Flight Plan ▪ Lost Procedures	▪ Explain VOR,NDB ▪ Compare navigation options ▪ Plan and exicute a simulated flight ▪ Know lost procedures ▪ Check operation of navigation signal	▪ Leg ▪ True Course ▪ Checkpoints ▪ Navigation Log ▪ Flight Plan ▪ Fuel Reserve ▪ Isogonic Line ▪ Magnetic Course ▪ Vortac ▪ Radial

	VOR Navigation ▪ VOR operations ▪ Ground and Airborne Equipment ▪ Basic Procedures ▪ VOR Orientation and Navigation ▪ VOR Checkpoints and Test Signals ▪ VOR Precautions ▪ Horizojntal Situation Indicator (HSI) ▪ Distance Measuring Equipment (DME) **ADF Navigation** ▪ ADF Equipment ▪ Orientation ▪ Homing ▪ ADF Intercepts and Tracking ▪ Movable-Card Indicators ▪ Radio Magnetic Indicator (RMI) ▪ ADF Precautions **Advanced Navigation** ▪ VORTAC-Based Area Navigation ▪ Global Positioning System (GPS)	▪ Locate your position	▪ VOR/DME ▪ Tracking
Flight planning (Week 18, 2 Weeks) **Private Pilot Standards (3).doc**	**The Flight Planing Process** ▪ VFR Cross-Country Flight Planning ▪ Compute Magnetic Headings Flight Time and Fuel Requirements ▪ Developing the Route ▪ Preflight Weather Briefing ▪ Completing the Navigation Log ▪ FAA FVR Flight Plan ▪ Diversions **Preflight Action** ▪ Preflight Weather Briefing ▪ Obtaining information on runway lengths at airports of intended use, data on takeoff and landing distances, weather and fuel requirements ▪ Alternates if the planned flight cannot be	▪ Plan a VFR flight plan ▪ Name good check points ▪ Consider weather and route ▪ Classify airspace ▪ map a route ▪ Select appropriate altitudes	▪ Flight Planning Process ▪ Airworthiness Certificate ▪ Wind Dot ▪ Electronic Flight Computer ▪ Wind Correction Angle (WCA) ▪ Hour Scale ▪ Wind Side ▪ Computer Side ▪ A Scale ▪ B Scale ▪ C Scale

completed or delays