

# South King County Tech Prep Consortium

## Aviation Competencies ~ Green River Community College

<b>AVIATION 111 - PRIVATE PILOT, GROUND SCHOOL – 5 credits</b>	
1.	Demonstrate knowledge of the following:
	<u>Pilot Training</u>
	• • How to get started
	• • Explain the Role of the FAA
	• • Describe General Aviation
	• • Explain Eligibility Requirements
	• • Describe Flight Schools
	• • Explain the Phases of Training
	• • Identify Category/Class ratings
	• • Additional Pilot Certificates
	• • Aviation Careers
	<u>Human Factors</u>
	• • Explain Aeronautical Decision Making
	• • Explain Crew Resources Management Training
	• • Explain Aviation Physiology
	• • Describe Communications Skills
	• • Describe Situational Awareness
	• • Describe Fitness for Flight
	• • Describe Workload management
2.	Gain a basic understanding of the main airplane components and systems:
	• • Fuselage
	• • Wings
	• • Empennage
	• • Landing gear
	• • Engine/Propeller
	• • Aircraft Flight Manual
	• • Flight Instruments
3.	Demonstrate knowledge in flight instrument systems operations, including errors and malfunctions:
	• • Describe the Airspeed Indicator
	• • Describe the Vertical Speed Indicator
	• • Describe the Altimeter
	• • Explain Gyroscopic Instruments
	• • Explain Magnetic Compass
4.	Demonstrate knowledge of the following engine related systems:
	• • Describe the Induction Systems
	• • Describe the Ignition Systems
	• • Describe the Fuel Systems
	• • Describe the Oil Systems
	• • Describe the Cooling Systems
	• • Describe the Exhaust Systems
	• • Describe Propellers
	• • Describe the Electrical Systems
	• • Explain Turbocharging
	• • Explain Turbine Engine Systems

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5.	Demonstrate knowledge of the following:
<u>Forces of Flight</u>	
• •	Explain Lift
• •	Explain Drag
• •	Explain Thrust
• •	Explain Weight
• •	Explain Ground Effect
• •	Explain Load Factor
<u>Aerodynamic Stability</u>	
• •	Explain Longitudinal Stability
• •	Explain Vertical Stability
• •	Explain Lateral Stability
• •	Explain Center of Gravity
• •	Explain Aircraft Axes
<u>Maneuvering Flight</u>	
• •	Describe Climbs
• •	Describe Descents
• •	Describe Turns
• •	Describe Climbing/Descending turns
• •	Describe Left Turning Tendencies
• •	Describe Stalls/Spins
6.	Explain collision avoidance, right-of-way rules, minimum safe altitudes and safety related regulations:
• •	Collision Avoidance
• •	Scanning Techniques
• •	Right-of-Way Rules
• •	Minimum safe Altitudes
• •	Airport Operations
• •	Taxiing in the Wind
7.	Describe and discuss the following:
<u>Airport Markings and Lighting</u>	
• •	Runway layout
• •	Traffic Pattern
• •	Airport Visual Aids
• •	Runway/Taxiway Markings
• •	Airport Lighting
• •	Visual Approach Indicators
• •	Approach Lighting Systems
• •	Pilot-Controlled Lighting
• •	Runway Incursion
<u>Aeronautical Charts</u>	
• •	Latitude and Longitude
• •	Projections
• •	VFR Charts
• •	Chart Symbolology
<u>Types of Airspace</u>	
• •	Controlled/Uncontrolled
• •	Class A
• •	Class B
• •	Class C

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	• • Class D
	• • Class E
	• • Class G
	• • Special VFR
	• • Special Use Airspace
	• • Emergency Air Traffic Rules
	• • Air Defense Identification Zones
8.	Explain radar, radar services and transponder operations:
	• • Radar Services
	• • Transponders
	• • Flight Service Stations
9.	Demonstrate the use of radio for communications:
	• • VHF Communication Equipment
	• • Using the Radio
	• • Phonetic Alphabet
	• • Coordinated Universal Time
	• • ATC Facilities and Controlled Airports
	• • Emergency Communications
	• • ELT's
	• • Lost Communications Procedures
10.	Explain the sources of flight information:
	• • Airport/Facility Directory
	• • Federal Aviation Regulations
	• • Aeronautical Information manual
	• • Notices to Airmen
	• • Advisory Circulars
11.	Discuss various weather conditions, frontal systems, and hazardous weather phenomena:
	<u>Basic Weather Theory</u>
	• • The Atmosphere
	• • Atmospheric Circulation
	• • Atmospheric Pressure
	• • Coriolis Force
	• • Global Wind Pattern
	• • Local Wind Pattern
	<u>Weather patterns</u>
	• • Atmospheric Stability
	• • Temperature Inversions
	• • Moisture
	• • Humidity
	• • Dewpoint
	• • Clouds and Fog
	• • Precipitation
	• • Airmasses
	• • Fronts
	<u>Weather Hazards</u>
	• • Thunderstorms
	• • Turbulence

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• • Wake Turbulence
• • Wind Shear
• • Microburst
• • Icing
• • Restriction to Visibility
• • Volcanic Ash
12. Explain how to obtain and interpret weather reports, forecasts, and graphic charts:
<u>Printed reports and Forecasts</u>
• • Aviation Routine weather Report (METAR)
• • Radar Weather Reports
• • Pilot Weather Reports
• • Terminal Aerodrome Forecast (TAF)
• • Winds and Temperatures Aloft Forecast
• • Severe Weather Reports and Forecasts
• • AIRMENT/SIGMET/CONVECTIVE SIGMET
<u>Forecasting Process</u>
• • Forecasting Methods
• • Types of forecasts
• • Compiling and Processing Weather Data
• • Forecasting Accuracy and Limitations
<u>Graphic Weather Products</u>
• • Surface Analysis Chart
• • Weather Depiction Chart
• • Radar Summary Chart
• • Satellite Weather Pictures
• • Low-Level Significant weather Prog
• • Severe Weather Outlook Chart
• • Forecast Winds and Temperatures Aloft Chart
• • Volcanic Ash Forecast and Dispersion Chart
13. Discuss the sources of weather information:
• • Preflight Weather Sources
• • In-Flight Weather Sources
• • Enroute Flight Advisory Service
• • Weather Radar Services
• • Automated Weather Reporting Systems
14. Explain how to use aircraft manufacturer's data to predict airplane performance, including takeoff and landing distances and fuel requirements:
<u>Predicting performance</u>
• • Aircraft Performance
• • Aircraft Design
• • Charts/Graphs Presentations
• • Takeoff and landing Performance
• • Climb Performance
• • Cruise Performance
• • Using Performance Charts
15. Describe how to compute weight and balance on light aircrafts:
• • Importance of weight and balance
• • Terminology

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• • Principles of Weight and Balance
• • Computation Methods
• • Table/Graph method
• • Weight-Shift Formula
• • Effects of Operating at High Total Weights
• • Flight at Various CG Positions
16. Describe the basic concepts for VFR navigation using pilotage, dead reckoning, and aircraft navigation systems:
<u>Flight Computers</u>
• • Time, Speed, and Distance
• • Airspeed and density Altitude Computations
• • Wind Problems
• • Conversions
• • Electronic Flight Computers
<u>Piloting and Dead Reckoning</u>
• • Piloting
• • Dead Reckoning
• • Flight Planning
• • VFR Cruising Altitudes
• • Flight Plan
• • Lost Procedures
<u>VOR Navigation</u>
• • VOR Operations
• • Ground and Airborne Procedures
• • Basic Procedures
• • VOR Orientation and Navigation
• • VOR Checkpoint and Navigation
• • VOR Test Signals
• • Horizontal Situation Indicator
• • Distance Measuring Equipment
<u>ADF Navigation</u>
• • ADF Equipment
• • Orientation
• • Homing
• • Intercept and tracking
• • ADF Precautions
<u>Advanced Navigation</u>
• • VORTAC-Based Area navigation
• • Long range navigation (LORAN)
• • Global Positioning System
17. Discuss the planning process for a cross-country flight:
• • Developing the route
• • Preflight Weather Briefing
• • Completing the navigational Log
• • Filing the Flight Plan
18. Demonstrate comprehension of the academic material presented in this course by the student's readiness to successfully complete the FAA Private Pilot Airmen Knowledge test.

Approved 9/16/09