

South King County Tech Prep Consortium

Aviation Competencies Green River Community College Competencies for Instrument Pilot Ground School AVIA 216 – 5 credits

1. Instrument/Commercial Training Opportunities

- Instrument Flight
- Instrument/Commercial training
- Commercial Pilot Privileges
- Additional Certificates and Ratings

2. Advanced Human Factors Concepts

- Aeronautical Decision Making
- Crew Resource Management
- The Decision-Making Process
- Pilot-in-Command Responsibilities
- Communications
- Resource use
- Workload Management
- Situational Awareness

3. Aviation Physiology

- Spatial Disorientation
- Vestibular Disorientation
- Motion Sickness
- Hypoxia
- Prevention of Hypoxia
- Decompression Sickness
- Hyperventilation
- Stress
- Fatigue
- Alcohol and Drugs
- Fitness for Flight

4. Flight Instrument System

- FAA Instrument Requirements
- Pilot's Operating Handbook

5. Gyroscopic Flight Instrument

- System Operation
- System Error
- Instrument Check

6. Magnetic Compass

- System Operation
- System Error
- Instrument Check

7. Pitot-Static Instrument

- System Operation
- System Error
- Instrument Check
- V-speeds and Color Codes

8. Attitude Instrument Flying Fundamental Skills

- Instrument Cross-Check
- Instrument Interpretation
- Aircraft Control
- Primary/Support Concept
- Control and Performance Concept

9. Basic Flight maneuvers

- Straight-and-Level Flight
- Standard Rate Turns
- Steep Turns
- Constant Airspeed Climbs and Descents
- Constant Rate Climb and Descents
- Leveloff from Climbs and Descents
- Climbing and Descending Turns
- Stalls

10. Coping with Instrument Failure

- Identifying an Instrument Failure
- Attitude Indicator failure
- Heading Indicator Failure
- Partial Panel Flying
- Magnetic Compass Turns
- Timed Turns
- Pitot-Static Instrument Failures

11. Unusual Attitude Recovery

- Nose-High Attitude
- Nose-Low Attitude
- Partial Panel Unusual Attitude Recovery

12. VOR Navigation

- Horizontal Situation Indicator
- Intercepting a Radial
- Tracking
- Determining Your Progress
- Time and Distance to a Station
- Station Passage
- VOR Limitations
- Distance Measuring Equipment
- DME Arcs

13. ADF Navigation

- Radio Magnetic Indicator
- Intercepting a Bearing
- Tracking
- Time and Distance to a Station
- Station Passage

14. Operational Considerations

- Ground Facilities
- VOR Checks
- Identification

15. Area Navigation (RNAV)

- VORTAC Based Area Navigation
- Inertial Navigation System (INS)
- Long Range Navigation (LORAN)
- Global Positioning System (GPS)

16. Regulations

- FAR Part 1
- FAR Part 61
- FAR Part 91
- NTSB Part 830

17. Airports, Airspace, and Flight Information

- Runway Markings
- Taxiway Markings
- Airport Signs
- Runway Incursion Avoidance
- Approach Light System
- Visual Glide Slope Indicators
- Runway Lighting
- Airport Beacons and Obstruction Lights

18. Airspace

- Controlled Airspace
- Class A, B, C, D, and E Airspace
- Special VF
- Class G Airspace (Uncontrolled)
- Aircraft Sped Limits
- Special Use Airspace
- Other Airspace Areas
- ADIZ

19. Flight Information

- Aeronautical Information Manual
- Airport/Facility Directory
- Notices to Airman (NOTAMs)
- International Flight Information Manual
- Advisory Circulars
- Jeppesen Information Services
- GPS/Loran Coordinate Directory
- Electronic Flight Publications

20. Air Traffic Control System

- Air Route Traffic Control Center
- ARTCC Traffic Separation
- Processing the IFR Flight Plan
- Weather Information
- Safety Alerts
- Emergency Assistance
- Terminal Facilities
- ATIS
- Clearance Delivery
- Control Tower
- Approach and Departure Control
- Radar Service for VFR Aircraft
- Flight Service Stations

21. ATC Clearances

- Pilot Responsibilities
- IFR Flight Plan and ATC Clearance
- Elements of an IFR Clearance
- Abbreviated IFR Departure Clearance
- VFR on Top
- Approach Clearances
- VFR Restrictions to an IFR Clearance

- Composite Flight Plan
- Tower En Route Control Clearance
- Departure Restriction
- Clearance Readback
- Clearance Shorthand

22. Departure Charts

- Standard Instrument Departure
- Pilot Nav SID
- Vector SID
- Chart Format and Symbology

23. Departure Procedures

- Takeoff Minimums
- Departure Options
- IFR Departure Procedures
- Radar Departures
- VFR Departures
- Selection a Departure Method

24. En Route and Area Charts

- En Route Charts
- Front Panel
- Navigation Aids
- Victor Airways
- Communication
- Airports
- Airspace
- Area Charts

25. En Route Procedures

- En Route Radar Procedures
- Communication
- Reporting Procedures
- En Route Navigation Using GPS
- Special Use Airspace
- IFR Cruising Altitudes
- Descending From the En route Segment

26. Holding Procedures

- Standard and Nonstandard Patter
- Outbound and Inbound Timing
- Crosswind Correction
- Maximum Holding Speed

- Direct Entry
- Teardrop Entry
- Parallel Entry
- Visualizing entry Procedures
- ATC holding Instructions

27. Arrival Charts

- Standard Terminal Arrival Route
- Interpreting The STAR
- Vertical Navigation Planning

28. Arrival Procedures

- Preparing for the Arrival
- Reviewing the Approach
- Altitude
- Airspeed

29. Approach Segments

- Initial Approach Segment
- Intermediate Approach Segment
- Final Approach Segment
- Missed Approach Segment

30. Approach Chart Layout

- Heading Section
- Plan View
- Profile View
- Step Down Fix and VDP
- Landing Minimums
- Aircraft Approach Categories
- Minimum Descent Requirements
- Visibility Requirements
- Inoperative Components

30. Airport Chart

- Heading Section
- Plan View and Additional Runway Information
- Takeoff and Alternate Minimums

31. Jeppesen Briefing Strip Charts

- Heading Section
- Profile View

32. Approach Procedures

- Preparing for the Approach
- Approach Chart Review
- Approach Clearance
- Executing the Approach
- Straight-In Approaches
- Use of ATC Radar for Approaches
- Approaches Which Requires a Course Reversal
- Timed Approaches From a Holding Fix
- Final Approach
- Circling Approaches
- Sidestep Maneuver
- Missed Approach Procedures
- Visual and contact Approaches

33. VOR and NDB Approaches

- VOR Approach Procedures
- Off-Airport Facility
- On-Airport Facility
- VOR/DME Approach Procedures
- NDB Approach Procedure
- Radar Vectors to the Approach

34. ILS Approaches

- ILS Categories and Minimums
- ILS Components
- Inoperative Components
- Flying the ILS
- Straight-IN (NoPT) ILS Approach
- ILS Approach With a Course Reversal
- ILS/DME Approach
- Radar Vectors to ILS Final
- ILS Approaches to Parallel Runways
- Simultaneous Converging Instrument Approach
- Localizer Approach
- Localizer Back Course Approach
- LDA, SDF, and MLS Approaches

35. GPS and RNAV Approaches GPS

- Approach Design
- GPS Approaches
- GPS Equipment Requirements
- The Navigation Database
- Special GPS Navigation Considerations

- GPS Overlay Approach
- GPS Stand Alone Approach
- Vectors to a GPS Approach

36. VOR/DME RNAV

- Operating Principles
- VOR DME RNAV Approaches

37. Weather Factors

- The Atmosphere
- Atmospheric Circulation
- Pressure and Wind Patterns
- Moisture, Precipitation, and Stability
- Types of Clouds
- Airmass
- Fronts
- High Altitude Weather

38. Weather Hazards

- Thunderstorms
- Thunderstorm Avoidance
- Low level Turbulence
- Turbulence
- Wake Turbulence
- Clear Air Turbulence
- Mountain Wave Turbulence
- Reporting Turbulence
- Wind Shear
- Low Visibility
- Volcanic Ash
- Icing
- Hydroplaning
- Cold Weather Operations

39. Printed Reports and Forecasts

- Aviation Routine Weather Report (METAR)
- Radar Weather Reports
- Pilot Weather Reports
- Terminal Aerodrome Forecast
- Aviation Area Forecast
- Winds and Temperature Aloft Forecast
- Severe Weather Reports and Forecasts

40. Graphic Reports

- Surface Analysis Charts
- Weather Depiction Chart
- Radar Summary Chart
- Satellite Weather Pictures
- Composite Moisture Stability Chart
- Constant Pressure Analysis Chart
- Observed Winds and Temperature Aloft Chart

41. Graphic Forecasts

- Low-Level Significant Weather Prog
- High-Level Significant Weather Prog
- Severe Weather Outlook Chart
- Forecast Winds and Temperatures Aloft Chart
- Tropopause Data Chart
- Volcanic Ash Forecast and Dispersion Chart

42. Preflight Weather Sources

- Flight Service Station
- Preflight Weather Briefing
- Telephone Information Briefing Service
- Direct User Access Terminal System
- Private Industry Sources
- The World Wide Web

43. In-Flight Weather Sources

- Airmets and Sigmet
- Convective Sigmet
- En Route Flight Advisory Service
- Flight Service Station
- Center Weather Advisories
- Hazardous In-Flight Weather Advisory Service
- Transcribe Weather Broadcasts
- Automated Surface Observation System
- Automated Weather Observing System

44. Airborne Weather Equipment

- Weather Radar
- Lightning Detection Systems

45. IFR Emergencies

- Declaring an Emergency
- Minimum Fuel
- Gyroscopic Instrument Failure

- Communication Failure
- Emergency Approach Procedures
- Malfunction Reports

46. IFR Decision Making

- Decision-Making Process
- IFR Accident
- Poor Judgment Chain
- Assessing Risk
- Pilot-in-Command Responsibility
- Hazardous Attitudes
- Crew Relationships
- Communication
- Resource Use
- Workload Management
- Situational Awareness

47. IFR Flight Planning

- Route Selection
- Flight Information Publications
- Weather Considerations
- Altitude Selection
- Completing The Navigation Log
- Filing the Flight Plan
- Closing the IFR Flight Plan

48. Academic

- Principles of Instrument Flight
- The Flight Environment
- Meteorology
- Departure Charts and Procedures
- En route Charts and Procedures
- Arrival Charts and Procedures
- Approach Charts and Procedures

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