

Professional Pilot Ground School Syllabus

1. Airframes and Engines [FTGU pp 8-18]		
<ul style="list-style-type: none"> • Parts of an airplane • Fuselage construction • Wing construction • Construction materials 	<ul style="list-style-type: none"> • Load and Load Factors • Rigging & Controls • Propulsion System • Fuel System 	<ul style="list-style-type: none"> • Hydraulic System • Undercarriage System • Heat & Vent Systems • Aircraft Records
2. Engines I – Systems [FTGU pp 51-56]		
<ul style="list-style-type: none"> • Types of Powerplants • Classification of Piston Engines 	<ul style="list-style-type: none"> • Basic Engine Components & Operation • Sequence of Engine Strokes 	<ul style="list-style-type: none"> • Timing • Jet Engines • Turbo-Prop Engines
3. Engines II – Fuel Systems [FTGU pp 54-63]		
<ul style="list-style-type: none"> • Fuel and Fuel Systems • Carburetor Construction and Operation 	<ul style="list-style-type: none"> • Leaning Mixture at Cruise • Carburetor Ice • Carburetor Heat 	<ul style="list-style-type: none"> • Turbocharging • Fuel Injection
4. Engines III – Other Systems [FTGU pp 57-59, 69-72]		
<ul style="list-style-type: none"> • Lubrication Systems • Ignition Systems 	<ul style="list-style-type: none"> • Electrical Systems • Vacuum Systems 	
5. Flight Instruments [FTGU pp 39-50; AIM AGA, RAC, AIR]		
<ul style="list-style-type: none"> • Pitot Static: <ul style="list-style-type: none"> ○ Airspeed Indicator ○ Altimeter ○ Vertical Speed Indicator 	<ul style="list-style-type: none"> • Gyroscopic: <ul style="list-style-type: none"> ○ Attitude Indicator ○ Heading Indicator 	<ul style="list-style-type: none"> ○ Turn Coordinator • Magnetic Compass
6. Aerodynamics and Theory of Flight [FTGU pp 21-39]		
<ul style="list-style-type: none"> • Forces acting on an aircraft in flight <ul style="list-style-type: none"> ○ Theory of Lift ○ Theory of Drag ○ Generation of Thrust ○ Basic Propellor Theory 	<ul style="list-style-type: none"> • Design of the Wing • Axes of the Aircraft • Stability <ul style="list-style-type: none"> ○ Longitudinal ○ Lateral ○ Directional • Flight Performance <ul style="list-style-type: none"> ○ Asymmetric Thrust 	<ul style="list-style-type: none"> ○ Precession ○ Slipstream ○ Climbing ○ Gliding ○ Turns ○ Stalls ○ Spins ○ Spiral Dives

7. Flight Operations I – Airport Operations [\[AIM RAC 4, CFS Facility Charts, VTA, FTM pp 101-103\]](#)

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| <ul style="list-style-type: none"> • Safety Hints • Standard Circuit • Uncontrolled Airport Procedures • Controlled Airport Procedures | <ul style="list-style-type: none"> • VFR Terminal Procedure Charts • VFR Terminal Area Charts • VTA Special Procedures | <ul style="list-style-type: none"> • Other Special Procedures: • Wake Turbulence • Jet Blast • Taxiing |
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8. Flight Ops II – Flight Plans & Flight Itineraries [\[AIM RAC 3.15-3.16, SAR 1.0-2.0\]](#)

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| <ul style="list-style-type: none"> • Requirements • Flight Plans • Flight Itineraries • Filing, Opening & Closing a Flight Plan | <ul style="list-style-type: none"> • Search & Rescue (SAR) Alerting • CASARA • Using the ICAO Flight Plan Form | <ul style="list-style-type: none"> • Special Considerations |
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9. Flight Ops III – AeroMedicine & Human Factors [\[FTGU pp 303-314, AIM AIR 3.1-3.18, TP12863\]](#)

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| <ul style="list-style-type: none"> • Hypoxia / Hyperventilation • Nutrition • Alcohol / Drugs / Medications | <ul style="list-style-type: none"> • Environmental Factors • Sensory Sources & Sensory Illusions | <ul style="list-style-type: none"> • Decompression Effects • Trapped Gases • G-Loc • Fatigue |
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10. Canadian Air Regulations I – Licensing Requirements [\[AIM LRA 1.0\]](#)

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| <ul style="list-style-type: none"> • Licenses & Permits • Ratings | <ul style="list-style-type: none"> • Licensing Standards • Medical Standards | <ul style="list-style-type: none"> • Currency Requirements |
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11. Canadian Air Regulations II – Canadian Airspace [\[FTGU pp 99-106, AIM RAC 2\]](#)

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| <ul style="list-style-type: none"> • Domestic Airspace • Structure of Airspace | <ul style="list-style-type: none"> • Classification of Airspace |
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12. Canadian Air Regulations III – Rules & Regulations [\[AIM, CFS, WAS, CARS Parts IV, VI\]](#)

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| <ul style="list-style-type: none"> • Crosswind Limitations • Aeronautical Information Manual (AIM) | <ul style="list-style-type: none"> • NOTAMs • Canadian Flight Supplement (CFS) • Water Aerodrome Supplement (WAS) | <ul style="list-style-type: none"> • Canadian Air Regulations (CARs) • Required Documents • Emergencies |
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13. Meteorology I – Basic Meteorology [\[FTGU pp 123-134, AWWS\]](#)

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| <ul style="list-style-type: none"> • The Atmosphere • ICAO Standard Atmosphere | <ul style="list-style-type: none"> • Clouds • Pressure • Wind | <ul style="list-style-type: none"> • NavCanada Website • Weather Services • METAR |
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14. Meteorology II – Basic Weather Theory [\[FTGU pp 135-145, AWWS\]](#)

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| <ul style="list-style-type: none"> • Moisture & Temperature • Stability | <ul style="list-style-type: none"> • Air Masses • Fronts • Wx @ Fronts | <ul style="list-style-type: none"> • Wx Products: • TAF/GFA/Charts |
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15. Meteorology III – Active Weather [FTGU pp 146-156, AWWWS]

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| <ul style="list-style-type: none"> • Cloud Formation • Lifting process • Precipitation | <ul style="list-style-type: none"> • Fog • Visibility • Thunderstorms | <ul style="list-style-type: none"> • Icing • AIRMET/SIGMET/PIREP/FD |
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16. Pilot Decision Making (PDM) [FTGU pp 312-319, TP13897, www.TSB.gc.ca]

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| <ul style="list-style-type: none"> • The Accident Chain • The Decision Making Process • Factors Affecting Decision Making | <ul style="list-style-type: none"> • Situational Awareness • Stress and Stress Management • Personality Traits | <ul style="list-style-type: none"> • Hazardous Attitudes • Managing Risk • Accident Case Studies |
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17. Navigation I – Introduction to Navigation [FTGU pp 175-190]

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| <ul style="list-style-type: none"> • Definition • Latitude & Longitude • Time Zones • Time & Longitude • Bearings & Headings • Rhumb lines & Great Circle Routes • Magnetic Compass | <ul style="list-style-type: none"> • Earth's Magnetism • Magnetic Dip • Variation & Deviation • Allowing for Variation & Deviation • Compass Construction | <ul style="list-style-type: none"> • Northerly Turning Errors • Acceleration Errors • Aviation Charts/Maps • Projections/Scale • VNC/VTA/CFS • Chart Index/Symbols • Basic Plotting |
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18. Navigation II – Nav Logs, Calculations, Computers [FTGU pp 195-206]

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| <ul style="list-style-type: none"> • E6B computer <ul style="list-style-type: none"> • Slide rule side • Wind side • Electronic Computers | <ul style="list-style-type: none"> • Pre-Flight planning form • Performance Charts • Weight & Balance | <ul style="list-style-type: none"> • Cross-Country Planning/ Diversions • Basic Plotting Exercise |
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19. Navigation III – Radio Theory & Radio Communications [FTGU pp 207-226, NavCanada]

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| <ul style="list-style-type: none"> • Radio Frequencies (Bands) • Gen. Requirements • Licensing • Priority of Communications | <ul style="list-style-type: none"> • Radio Communication Techniques • Phonetic Alphabet • Call Signs • Two Way & Broadcast Communications | <ul style="list-style-type: none"> • Standard Sequences • Distress Communications • NavCanada VFR Phraseology Guide |
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20. Navigation IV – Radio Navigation [FTGU pp 227-255]

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| <ul style="list-style-type: none"> • Radio Communications • VOR (VHF Omni Range) | <ul style="list-style-type: none"> • ADF (Automatic Direction Finder) • GNSS/GPS (Global Positioning System) | <ul style="list-style-type: none"> • WAAS • Transponder • Primary & Secondary Surveillance Radar |
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21. Review