AERO 52 Course Outline as of Spring 2011

CATALOG INFORMATION

Dept and Nbr: AERO 52 Title: COMMERCIAL PILOT GRD SCH
Full Title: Commercial Pilot Ground School Course
Last Reviewed: 5/14/2007

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	3.00	17.5	Lecture Scheduled	52.50
Minimum	3.00	Lab Scheduled	0	17	Lab Scheduled	0
		Contact DHR	0		Contact DHR	0
		Contact Total	3.00		Contact Total	52.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 105.00 Total Student Learning Hours: 157.50

Title 5 Category:	AA Degree Applicable
Grading:	Grade or P/NP
Repeatability:	00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:	
Formerly:	

Catalog Description:
Federal Aviation Administration (FAA) Part 141 approved course. Review of airports, airspace, flight information, and meteorology, as well as airplane performance, VFR (visual flight rules) cross-country planning, and navigation. Also covers aviation physiology, aeronautical decision making, and the Federal Aviation Regulations (FAR) applicable to commercial pilot operations. The student will obtain the necessary aeronautical knowledge and meet the prerequisites specified in FAR Part 61 and PART 141 for a commercial pilot airmen knowledge test.

Prerequisites/Corequisites:
Completion of AERO 50 or equivalent or possession of private pilot certificate.

Recommended Preparation:

Limits on Enrollment:

Schedule of Classes Information:
Description: Review of airports, airspace, flight information, and meteorology, well as airplane performance, VFR cross-country planning, and navigation. Students gain necessary aeronautical knowledge and meet prerequisites specified in Federal Aviation Regulations FAR) Part 61 and

PART 141 for a commerical pilot airmen knowledge test. (Grade or P/NP)
Prerequisites/Corequisites: Completion of AERO 50 or equivalent or possession of private pilot certificate.
Recommended:
Limits on Enrollment:
Transfer Credit:
Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	**Area**	Effective:	Inactive:
CSU GE:	**Transfer Area**	Effective:	Inactive:
IGETC:	**Transfer Area**	Effective:	Inactive:

CSU Transfer:	Effective:	Inactive:
UC Transfer:	Effective:	Inactive:

CID:

Certificate/Major Applicable:
Certificate Applicable Course

COURSE CONTENT

Outcomes and Objectives:
Upon successful completion of this course, the student will be able to:
1. Discuss the airport environment, airspace, and flight information including collision avoidance and runway incursion avoidance.
2. Review and interpret weather patterns and hazards related to flight operations, the information contained in printed weather reports and forecasts and graphic weather products, as well as sources of weather information.
3. Review and interpret aeronautical charts for operations under VFR.
4. Demonstrate understanding of pilotage and dead reckoning methods for cross-country VFR flight.
5. Describe the common physiological factors affecting day and night flight operations and their adverse effects.
6. Discuss human factors concepts and crew resource management principles and their effect on flight safety.
7. Demonstrate understanding of the FARs related specifically to commercial pilot operations and of NTSB Part 830.
8. Explain the operation of complex aircraft systems, how to predict aircraft performance, and advanced aerodynamics appropriate to complex airplanes.
9. Describe the commercial decision making process and how to perform the flight maneuvers required for commercial pilot certification.

Topics and Scope:

STAGE IV (Continuation of textbook topics covered in AERO 51)

Ground Lesson 28: Airports, Airspace and Flight Information

A. Airports, Airspace and Flight Information
1. Runway and taxiway markings
2. Runway incursion avoidance
3. Land and hold short operations (LAHSO)
4. Lighting systems
5. Airspace
6. Flight information

B. Meteorology
1. Weather factors
2. Weather hazards
3. Printed reports and forecasts
4. Graphic weather products
5. Sources of weather information

C. Aeronautical charts
1. Sectional charts
2. VFR (visual flight rules) terminal area charts
3. World aeronautical charts
4. Longitude and latitude
5. Airport data
6. Navigation guides
7. Airspace
8. Obstructions
9. Topographical information

Ground Lesson 29: Pilotage and Dead Reckoning Methods for VFR Cross Country

A. Pilotage
B. Selecting checkpoints
C. Following a route
D. Orientation
E. Dead reckoning
F. Navigation plotter
G. Flight planning
H. Navigation log
I. Flight plan
J. Position reports
K. Flying over hazardous terrain

Ground Lesson 30 and Ground Lesson 31: Advanced Human Factors Concepts

A. Aviation physiology
1. The eye
2. Night vision
3. Night scanning
4. Visual illusions
5. Autokinesis
6. Landing illusions
7. Flicker vertigo
8. Disorientation
9. Illusions leading to disorientation
10. Motion sickness
11. Respiration
12. Hypoxia

13. Prevention of hypoxia
14. Hyperventilation
15. Decompression sickness
16. Alcohol, drugs, and performance

B. Aeronautical decision making and judgment
1. Aeronautical decision making
2. Crew resource management
3. Decision-making process
4. Pilot-in-command responsibility
5. Hazardous altitudes
6. Communication
7. Resource use
8. Workload management
9. Situational awareness

III. Ground Lesson 32: Commercial FARs
A. FAR 1
B. FAR 61
C. FAR 91
D. FAR 119
E. NTSB Part 830

Ground Lesson 33: STAGE IV EXAM
A. Airports, Airspace and Flight Information
B. Meteorology
C. Aeronautical charts
D. Pilotage and dead reckoning
E. Aviation physiology
F. Aeronautical decision making and judgment
G. Commercial FARs and NTSB Part 830

STAGE V

Ground Lesson 34: High Performance Power Plants
A. High Performance Power Plants
1. Fuel injection systems
2. Starting procedures
3. Normal starts
4. Hot starts
5. Flooded starts
6. Engine monitoring
7. Exhaust gas temperature gauge
8. Cylinder head temperature gauge
9. Abnormal combustion
10. Inducing icing

B. Turbocharging
1. Turbocharging principles
2. System operation
3. High altitude performance

C. Constant-speed propellers
1. Propeller principles
2. Constant-speed propeller operation
3. Power controls

Ground Lesson 35: Environmental and Ice Control Systems
A. Oxygen systems
1. Continuous-flow

2. Diluter-demand
3. Pressure-demand
4. Oxygen storage
5. Oxygen servicing

B. Cabin pressurization
1. Operating principles
2. Pressurization principles
3. Pressurization components
4. Pressurization emergencies

C. Ice control systems
1. Airfoil ice control
2. Windshield ice control
3. Propeller ice control
4. Other ice control systems

Ground Lesson 36: Retractable Landing Gear

A. Landing gear systems
B. Gear system safety
C. Airspeed limitations
D. Operating Procedures
E. Gear system malfunctions
F. Emergency gear extension

Ground Lesson 37: Advanced Aerodynamics

A. Four forces of flight
1. Lift
2. Lift equation
3. Controlling lift
4. High lift devices
5. Drag
6. Induced drag
7. Parasitic drag
8. Ground effect
9. Thrust
10. Weight and load factor
11. V-g diagram

B. Aircraft stability
1. Static
2. Dynamic
3. Longitudinal stability
4. Lateral stability
5. Directional stability

C. Aerodynamics and flight
1. Straight-and-level flight
2. Climbs
3. Glides
4. Turns
5. Stall and spin awareness
6. Stall causes and types
7. Stall recognition and recovery
8. Spin causes and phases
9. Spin recovery

Ground Lesson 38: Predicting Airplane Performance

A. Factors affecting performance

1. Density altitude
2. Surface winds
3. Weight
4. Runway conditions

B. The Pilots Operating Handbook

1. Performance charts
2. Takeoff charts
3. Climb performance charts
4. Cruise performance charts
5. Descent charts
6. Landing distance charts
7. Glide distance
8. Stall speeds

Ground Lesson 39: Controlling Weight and Balance

A. Weight and balance limitations
B. Center of gravity limits
C. Weight and balance documents
D. Weight and balance computations
E. Weight and balance condition checks
F. Computation method
G. Graph method
H. Table method
I. Weight shift computations

Ground Lesson 40: Maximum Performance Takeoffs and Landings

A. Soft field

1. Takeoff and climb
2. Description/procedure
3. Approach and landing

B. Short field

1. Takeoff and maximum performance climb
2. Description/procedure
3. Approach and landing
4. Combined procedures

Ground Lesson 41: Steep Turns and Chandelles

A. Steep turns

1. Steep turns
2. Description/procedures

B. Chandelles

1. Chandelles
2. Description/procedures

Ground Lesson 42: Commercial Flight Maneuvers

A. Lazy eights

1. Lazy eights
2. Description/procedure

B. Eights-on pylons

1. Eights-on-pylons
2. Description/procedure

C. Steep spirals

1. Steep spirals
2. Description/procedure

D. Power-off 180³ accuracy approach and landing

1. Power-off 180³ accuracy approach and landing

2. Description/procedure

Ground Lesson 43: Emergency Procedures
A. Emergency descent
B. Emergency approach and landing
C. In-flight fire
D. Partial power loss
E. Door opening in flight
F. Asymmetrical flap extension
G. Emergency equipment and survival gear

Ground Lesson 44: Commercial Decision Making
A. Commercial operations
B. Applying the decision making process
C. Crew resource management
D. Hazardous altitudes
E. Crew relationships
F. Communication
G. Barriers to effective communication
H. Resource use
I. Internal and external resources
J. Workload management
K. Planning and preparation
L. Prioritizing
M. Situational awareness
N. Controlled flight into terrain

Ground Lesson 45: STAGE V EXAM
A. High Performance Power Plants
B. Environmental and Ice Control Systems
C. Retractable Landing Gear
D. Advanced Aerodynamics
E. Predicting Airplane Performance
F. Controlling Weight and Balance
G. Commercial Flight Maneuvers
H. Emergency Procedures
I. Commercial Decision Making

Ground Lesson 46: END-OF-COURSE EXAM

Assignment:

1. Weekly reading, approximately 15- 25 pages.
2. Homework assignments: reviewing graphs, charts, printed reports and forecasts, graphics; Commercial Pilot (Airplane) Exercises in the FAR/AIM Textbooks/Manuals; complete chapter questions.
3. STAGE IV and STAGE V exams.
4. End-of-course exam. (Student must achieve a score of 70% or better to obtain FAA endorsement to qualify to take the required FAA aeronautical knowledge test.)

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

None, This is a degree applicable course but assessment tools based on writing are not included because problem solving assessments are more appropriate for this course.	Writing 0 - 0%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Homework problems	Problem solving 5 - 10%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

None	Skill Demonstrations 0 - 0%

Exams: All forms of formal testing, other than skill performance exams.

Multiple choice, Completion	Exams 80 - 90%

Other: Includes any assessment tools that do not logically fit into the above categories.

Attendance and participation	Other Category 5 - 10%

Representative Textbooks and Materials:
U.S. Govt. Publications current year: Aeronautical Information Manual, FARs (Federal Aviation Regulations).
Instrument Commercial Syllabus, Jeppessen Sanderson, current year.
Guided Flight Discovery Instrument Commercial textbook, by Jeppessen Sanderson Training Products, Jeppessen Sanderson, current year.
Commercial Pilot FAA Airmen Knowledge Test Guide, Jeppessen Sanderson, current year.