San Bernardino Valley College
Curriculum Approved: February 10, 2003
Last Updated: January 2003

I. COURSE DESCRIPTION:

A. Department Information:

Division: Technical
Department: Aeronautics
Course ID: AERO 140C
Course Title: Instrument Ground School and Flight Simulators
Units: 4
Lecture: 3 Hours
Laboratory: 3 Hours
Prerequisite: None

B. Catalog Description:

An Instrument ground school which provides academic and practical training in fundamentals of instrument flying. Course includes aerodynamic factors, flight instruments and techniques. Electronic navigational aids. Flight planning, communication, air traffic control, and procedures such as departure, en route, arrival, approach, missed approach, and emergencies. The subject matter is reinforced by flying the various procedures in the flight simulators. This course is an excellent refresher course for those who currently possess an Instrument rating or an Airline Transport Rating. **COMPLETION OF BASIC F.A.A.GROUND SCHOOL OR ENROLLMENT IN GROUND SCHOOL OR COMMERCIAL AERONAUTICAL COURSES.**

C. Schedule Description:

An Instrument ground school which provides academic and practical training in fundamentals of instrument flying. The subject matter is reinforced by flying the various procedures in the flight simulators. This course is an excellent refresher course for those who currently possess an Instrument rating or an Airline Transport Rating. **COMPLETION OF BASIC F.A.A.GROUND SCHOOL OR ENROLLMENT IN GROUND SCHOOL OR COMMERCIAL AERONAUTICAL COURSES.**

II. NUMBER OF TIMES COURSE MAY BE TAKEN FOR CREDIT: One

III. EXPECTED OUTCOMES FOR STUDENTS:

Upon completion of the course, the student will be able to:

A. Accomplish the basic areas which the Federal Aviation Administration as outlined in Parts 61 and 91
B. Interpret the provisions of an en route chart, such as minimum en route altitude, minimum obstruction altitude, minimum crossing altitude, and minimum reception altitude
C. Interpret and comply with the complex procedures in the Instrument Approach Charts

IV. CONTENT:

A. Ground Navigation Aids
   1. VOR
   2. Receiver check
   3. Distance measuring equipment
   4. Navigation aid service volumes
   5. ILS
   6. Non-directional Beacon
   7. Localizer-type directional aid
   8. Simplified directional facility
   9. Microwave
   10. Navigational aid removal
   11. Loran
B. Runway Environment Lights And Marking
   1. Visual glide slope indicators
   2. Runway edge light systems
   3. Runway end identifier lights (REIL)
   4. control of lighting systems

5. Runway marking
6. Holding position marking
7. Mandatory instruction signs

C. General dimensions of airspace segments
1. General
2. Class A airspace
3. Class B airspace
4. Class C airspace
5. Class E airspace
6. General
7. Prohibited airspace
8. Military operations areas

D. Traffic advisory (without tower)
1. Automatic terminal info service (ATIS)
2. Radar traffic information service
3. Terminal radar service for VFR aircraft
4. Tower en route control
5. Transponder operation
6. Intersection takeoffs
7. Clearance items
8. Pilot responsibility upon clearance issue
9. IFR clearance VFR-on-top
10. Adherence to clearance
11. Use of visual clearing procedures

E. Preflight preparation
1. Notice to airmen (NOTAM)system
2. Flight plan-defense (DVFR)flights
3. Composite flight plan (VFR/IFR flights)
4. Flight plan-IFR flights
5. Canceling IFR flight plan
6. Abbreviated IFR departure clearance (cleared 3 as filed) procedures

F. Departure restrictions, clearance void times, hold for release, and release times
1. Departure control
2. Instrument departures
3. Position reporting
4. Additional reports
5. Airways and route system
6. Change over points (COP'S)
7. Holding
8. Standard terminal arrival (STAR)
9. Approach control
10. Instrument approach procedure charts
11. Approach clearance

G. Instrument approach procedures
1. Procedure turn
2. Timed approaches from a holding fix
3. Parallel ILS/ML approaches(dependent)
4. Simultaneous ILS/MLS (independent)
5. Side-step
6. Approach and landing minimums
7. Missed approach
8. Visual approach
9. Contact approach
10. Instrument approach
11. Missed approach
12. Radar vectors
13. See and avoid

14. Speed adjustments
15. Visual approach
16. Minimum fuel advisory

H. Emergency condition- request assistance immediately
1. Two-way radio communication failure
2. Transponder operation during two-way communication failure

I. Preflight briefing
1. En route flight advisory service (EFAS)
2. In-flight weather advisories
3. In-flight weather broadcasts
4. ATC in-flight weather avoidance assistance
5. Runway visual range (RVR)

J. PIREPS relating to volcanic ash activity
1. General
2. Procedures
3. Vortex strength
4. Vortex behavior
5. Vortex avoidance procedures

K. Effects of altitude
1. Hyperventilation in flight
2. Illusions in flight
3. Visions in flight

L. Charts
1. General description of each chart series

M. Federal Aviation Regulations:
1. Part 1:
   a) 1.1 General definitions
   b) 1.2 Abbreviations and symbols
2. Part 61:
   a) 61.3 Certification of foreign pilots and flight instructors
   b) 61.51 Pilot logbooks
   c) 61.57 Recent flight experience pilot in command
   d) 61.65 Instrument rating requirements
   e) 61.129 Airplane rating: aeronautical experience
3. Part 91:
   a) 91.3 Responsibility and authority of the pilot in command
   b) 91.21 Portable electronic devices
   c) 91.103 Preflight action
   d) 91.109 Flight instruction; simulated instrument flight and certain flight tests
   e) 91.113 Right-of-way rules: except water operations
   f) 91.117 Aircraft speed
   g) 91.121 Altimeter settings
   h) 91.123 Compliance with ATC clearances and instructions
   i) 91.129 Operations in class D airspace
   j) 91.131 Operations in class B airspace
   k) 91.133 Restricted and prohibited areas
   l) 91.135 Operations in class a airspace
   m) 91.155 Basic VFR weather minimums
   n) 91.157 Special VFR weather minimums
   o) 91.159 VFR cruising altitude or flight level
   p) 91.167 Fuel requirements for flight in IFR conditions
   q) 91.171 VOR equipment check IFR operations
   r) 91.173 ATC clearance and flight plan required
   s) 91.175 Takeoff and landing under IFR
   t) 91.177 Minimum altitudes for IFR operations
   u) 91.179 IFR cruising altitudes or flight level

v) 91.181 Course to be flown
w) 91.183 IFR radio communications
x) 91.185 IFR operations: two-way radio communication failure
y) 91.187 Operation under IFR in controlled airspace: malfunction reports
z) 91.205 Powered civil aircraft - instrument and equipment requirements
aa) 91.211 Supplemental oxygen
bb) 91.215 ATC transponder and altitude reporting equipment and use
cc) 91.411 Altimeter system and altitude tests
dd) 91.413 ATC transponder tests and inspections

4. Part 97:
   a) 97.3 Symbols and terms used in procedures
5. NTSB: 830 All

N. Computer (E6-B type):
1. Speed, time, distance (60 minute index)
2. Speed, time, distance (36 index)
3. Altitude corrections
4. Density altitude
5. Wind direction
6. Wind velocity

V. METHODS OF INSTRUCTION:

A. Lecture
B. Discussion between teacher and students or from students working from a group
C. Audio visual aids and demonstrations
D. A minimum of 12 hours of written homework will be assigned each week.

VI. TYPICAL ASSIGNMENTS:

A. Study chapters in the Instrument Flying Handbook and the Aeronautical Information Manual regarding Holding Patterns
B. Explain the indications on the two VOR Indicators in order to determine the entry procedure for holding at an intersection.
C. Explain the definitions of the terms: Minimum Descent Altitude and Decision Height.

VII. EVALUATION(S):

D. Methods of Evaluation:
1. Quizzes
2. Examinations
3. Mid-term examinations
4. Final examinations

Typical Questions:
a) Explain the requirements for an Instrument Rating.
b) Explain the requirements for currency.

E. Frequency of Evaluation:
1. Weekly quizzes
2. Periodic phase examinations
3. One Mid-term examination
4. One final examination

VII. TYPICAL TEXT(S):

Crane, Dale, Instrument Pilot Test Guide, Newcastle, WA, Aviation Supplies & Academics, 2002
F.A.A., Airman's Information Manual, Jeppesen, 2002

VIII. OTHER SUPPLIES REQUIRED OF STUDENT: None