UNIVERSITY *of* DUBUQUE

CRJ - 200
TRAINING COURSE OUTLINE

UNIVERSITY *of* DUBUQUE

CRJ - 200
TRAINING COURSE OUTLINE

CRJ-200
Training Course Outline

Systems Flight Training

Lessons 1—9

18 hours (approx) of dual flight training

Objectives

The student will be instructed in systems operations for the CRJ-200.

Completion Standards

This stage will be complete when the student meets all

lesson standards and satisfactorily performs the Stage Check.

CRJ-200 LESSON 1—AIRCRAFT GENERAL

OBJECTIVE: Familiarize the student with the FTD and the overall role of flight training devices as they relate to the industry.
TIME: 2 hours

PREFLIGHT BRIEFING

____ Training schedule
____ Training departments
____ Check airman (line check vs. IOE
____ Sim partner
____ Procedures training ("paper tiger")
____ PC/Loft/Type Ride
____ V_1 / V_R / V_2 / V_T
____ Role of pilot flying/not flying

FTD FAMILIARIZATION

____ Switch types (spring loaded/push button)
____ IOS capabilities
____ Emergency stop
____ Visual/modeled airports
____ Don't move controls during reposition or startup

STARTUP

____ How to get ground power to a/c
____ Limitations with DC power only
____ Layout of overhead switches
____ Layout of glareshield switches
____ Layout of side panel switches

CLOCK

____ Start/Stop/Reset

AIR DATA REFERENCE PANEL

____ Speed card
____ Set V speeds
____ Set altimeters
____ Set MDA/DH

DISPLAY CONTROL PANEL

____ NAV sources
____ Formats
____ Range
____ Bearing pointers
____ Traffic
____ Radar/Terrain

DISPLAY REVERSING PANEL

____ PFD vs. EICAS

FMS

____ "Radio" page set frequency
____ "PERF" set TO limits

RTU

____ Set frequency
____ Set transponder code
____ TCAS
____ DME hold

SYNOPTIC PAGE SWITCHES

____ STAT, ECS, HYD, ELEC, FUEL, F/CTL, A/ICE, DOORS

SOURCE SELECT PANEL

____ Att/HDG
____ EICAS
____ Air data
____ Display control

COMPASS CONTROL PANEL

____ DG vs. MAG

TAKE OFF

____ Use of TOGA/HDG/NAV/Speed
____ Flight control panel exercises

	Dual FTD	Total FTD
This Lesson		
Total		

COMPLETION STANDARDS

The student will have demonstrated their knowledge of each task.

Instructor _____ Student _____ Date _____

CRJ-200 LESSON 2—ENGINES

OBJECTIVE: To develop the ability to start the aircraft's APU and engines through normal and abnormal situations.
TIME: 2 hours

PREFLIGHT BRIEFING

____ Review APU and engine limitations

____ APU and a/c engine starter power sources, windmilling start

____ Hazards associated with engine starting: jet blast, crossbleed, engine plugs, wind direction and speed, ground personal safety, FOD

____ Aircraft safety policy non-engine related: hydraulic, radar

____ Checklist procedures

____ Which engine to start first: "to the box", QRH

____ Single vs. two engine taxi

____ Flex power

____ APR

____ Cool periods before shutdown

START UP NORMAL

____ Flight deck safety checklist: start APU

____ Normal engine start:

- Before start checklist
- Cleared to start checklist
- Engine start flow
- After start checklist

____ Second engine start

- Crossbleed start

START UP ABNORMAL (NO APU)

____ Engine start external air battery only

____ Hot start engine 1

____ N_2 stagnation start engine 2

TAKEOFF

____ FMS/Flex power settings

____ APR demonstration

____ Oil pressure vs. vib meters

____ Severe damage vs. flameout

ENROUTE

____ Engine anti-ice

____ Engine Vib

- N1
- N2

____ Stall

- Continuous IGN

____ Single engine failure

____ Double engine failure

- Windmilling start

BEFORE LANDING CHECKLIST

____ Thrust reverser operations

AFTER LANDING

____ Single engine ops

- Situations
- Contamination

SHUT DOWN CHECKLIST

____ Cool times

____ APU start/stop

	Dual FTD	Total FTD
Previous		
This Lesson		
Total		

COMPLETION STANDARDS

The student will have demonstrated their knowledge of each task.

Instructor _____ Student _____ Date _____

CRJ-200 LESSON 3—ELECTRICAL SYSTEM

OBJECTIVE: To demonstrate knowledge of electrical sources, identify electrical problems, and effectively use correct checklist.
TIME: 2 hours

PREFLIGHT BRIEFING

____ Review of electrical limitations
____ Electrical power services panel switch review
____ Sources of electrical power to a/c
- Batteries
- IDG
- Ground power

____ TRU and inverter
____ Priority logic
____ ADG
____ Circuit breaker policy
____ NTSB 830

START UP

____ DC service switch
- Lights (NAV, beacon, boarding, LAV, galley dome)

____ Flight deck inspection check APU Battery below 22 volts
- APU battery below 22 volts
- DC ground power

____ APU GEN failure
- AC ground power (“Avail” vs. “In Use”)

____ Before start check
____ Cleared to start checklist
____ After start checklist
- Priority logic

____ Taxi checklist
____ Second engine start checklist
- Priority logic

CRUISE FL330

- GEN 1 offline (1 GEN)
- Load shedding
- Reset
- GEN 1 IDG fault
- GEN 2 offline
- ADG (works to 100 kts)
- GEN 2 reset
- ADG “PWR transfer”
- APU restart (altitude)
- QRH procedures

Reset normal conditions
- CB “A/C utility bus feed”

Reset normal conditions
- A/C service bus failure
- A/C service bus messages

Reset normal conditions
- A/C bus fail
- What DC buses did we lose?
- How is ESS DC plus battery DC powered?

____ Before landing checklist
____ After landing checklist
____ Shut down checklist
- Are we on ground power or APU?

	Dual FTD	Total FTD
Previous		
This Lesson		
Total		

COMPLETION STANDARDS

The student will have demonstrated their knowledge of each task.

Instructor _____ Student _____ Date _____

CRJ-200 LESSON 4—FMS

OBJECTIVE: Familiarize the students with the FMS and its functionality. The students will also be developing their knowledge of how to initialize and manipulate the FMS through various scenarios that can be observed while flying.
TIME: 2 hours

PREFLIGHT BRIEFING

____ Review flight plan information and clearances

____ Review SID/STAR charts

____ Review FMS terminology (scratch pad, L/R 1-6 keys, autotune, etc.

Clearance: **KMSP-MSP4-direct-GEP-J25-MCW-BULLZ.BULLZ1-KORD**

____ Flight deck safety check

____ Complete all checklist to take off position

FLIGHT—FMS INITIALIZATION

STATUS PAGE

- Cycle Active & Secondary Databases twice to clear all previous information

INDEX PAGE

- Select "L2-Position Initialization"
- Type KMSP into scratchpad and place on L2
- Select Lat/Longs on R5 "Set Position"
- If the Lat/Longs on R5 do not match the Lat/ Longs on L1…
  - Press R5 to place the Lat/Longs in the scratchpad
  - Press R5 to reset Lat/Longs
  - L1 should now match R5

____ Verify the "FMS Position" Lat/Longs match the Lat/Longs on the airport diagram (10-9)

FLIGHT PLAN PAGE

____ Press "FPLN" button

____ Enter departure airport on L1 (KMSP)

____ Enter destination airport on R1 (KORD)

____ Enter flight number (UD 2345)

____ Press "EXEC" button to execute and save inputs

DEPARTURE

____ Press "DEP/ARR" button

____ Select the active departure runway (RW22)

____ Select the assigned SID (MSP4)

____ Select the assigned transition

FLIGHT PLAN PAGE

____ Enter route/waypoints

- If filed direct, place waypoint/navaid on R side
- If filed via J/V routes, place J/V### on L side and the navaid on R side

ARRIVAL

____ Press "DEP/ARR" button twice

____ Select "ARR" at "KORD" (R2)

____ Select assigned arrival (BULLZ1)

____ Select assigned transition (MCW)

____ Select expected runway and approach (ILS 9R)

LEGS PAGE

____ Pilot who programmed the FMS selects the North/Plan map on his/her MFD

____ Pilot who did not program the FMS uses paper Jepps to verify

____ Pilot who programmed the FMS:

- Use the arrow keys to scroll through each leg
- Verify the waypoint selected is on the MFD
- Read the course and distance between waypoints

Set:
- MYTCH FL240
- JVL 15,000
- TEDDY 10,000

____ Pilot who did not program the FMS:

- Use the appropriate SID, Enroute, and STAR charts to verify the course, distance and altitude/speed restrictions

____ When both pilots confirm the legs are correct:

- Press FPLN button
- Verify the total distance
- Execute with the "EXEC" button
- Copy Active Flight Plan by pressing L5

CRJ-200 LESSON 4—FMS (continued)

OBJECTIVE: Familiarize the students with the FMS and its functionality. The students will also be developing their knowledge of how to initialize and manipulate the FMS through various scenarios that can be observed while flying.
TIME: 2 hours

PERFORMANCE

____ Press "PERF" button

____ Defaults to the Thrust Limit

- Set OAT
- Select engine bleed setting appropriate for takeoff (normal=off)
- Set Flex temperature (pg 2) 40C, note N markings

____ Press R6 "PERF INIT"

- Enter cruise altitude (F350 or FL350)
- Enter passenger count and appropriate weight (35/184)
- Enter cargo weight (1120)
- Set wind velocity for climbs, cruise, descent (320/40, 300/65, 040/32)
- Set ISA deviation (+8)
- Set reserve and taxi fuel (1540, 320)

MFD MENU

____ Press the MFD MENU button

____ Both Pilots:

- HI Navaids
- Speed
- Altitude
- Missed Approach
- RNG to ALT (pg 2)
- LRN POS (pg 2)

____ Pilot Flying ("WINDOW")

- VNAV

____ Pilot Monitoring ("WINDOW")

- ON

RADIOS

____ Press RADIO button

____ Make sure that NAV 1 and 2 are in "AUTO" mode by pressing L/R4

____ MUST BE IN "WHITE NEEDLES" TO AUTOTUNE

FMS OPERATIONS

____ Taxi to 30L, Confirm and Execute

- DEP/ARR, select 30L, vector to intercept J25

____ Takeoff

- Fly runway heading, vector to intercept J25

____ Intercept J25

- Select GEP on L3
- Place "behind you" on L2
- Confirm/Execute
- Select NAV mode on FCP

____ Direct SUZYQ

- Select SUZYQ on L3
- Place on L2
- Confirm/Execute

____ Hold at SUZYQ

- Press HOLD key
- Select SUZYQ on L2 and place on L6
- Set inbound course and turn direction (098/L) on L3
- Set leg length (10) on L5
- Confirm/Execute

____ Exit Hold at SUZYQ

- Select L6 "EXIT HOLD" and execute

____ Divert to DBQ

- Load ILS 36
- DEP/ARR
- ILS 36
- Vectors

CRJ-200 LESSON 4—FMS (continued)

OBJECTIVE: Familiarize the students with the FMS and its functionality. The students will also be developing their knowledge of how to initialize and manipulate the FMS through various scenarios that can be observed while flying.
TIME: 2 hours

DIVERT TO DBQ (continued)

____ To "Activate" or "Sequence" the approach

- Select GOLDN (on pg 2 or 3)
- Place on L2 on LEGS pg 1
- Set 358 on R6
- Confirm/Execute

POSTFLIGHT

	Dual FTD	Total FTD
Previous		
This Lesson		
Total		

COMPLETION STANDARDS

The student will have demonstrated their knowledge of each task.

Instructor	Student	Date
_____	_____	_____

CRJ-200 LESSON 5

OBJECTIVE: Familiarize the students with the fire protection system and reinforce FMS programming.
TIME: 2 hours

PREFLIGHT BRIEF

____ Engine fire detection and extinguishing
____ APU fire detection and extinguishing
____ Cargo fire detection and extinguishing
____ Lavatory fire detection and extinguishing
____ Main landing gear overheat detection
____ Portable fire extinguishers
____ Flight deck safety checklist
____ Fire detection panel (engines & APU)
- Channels A, B, and both
- Test switch
  - WARN
  - FAIL

____ Fire extinguisher monitor panel (engines, APU, and Cargo)
- Test
- NORM

____ Cargo fire panel
- Normal (Bottles)
- Standby (Bottles)

____ Main landing gear bay overheat
- Overheat
- Warn fail

____ Before start checklist
- FMS program KMSP-MSP4-directGEP-J25-AICW-BULLZ.BULL21-KORD
- Depart runway 22 KMSP
- Land ILS9R KORD
- FL330
- Select APU fire
- QRH
- Evacuate?
- Clear failure

____ Cleared to start checklist
____ After start checklist
____ Taxi checklist
____ Second engine checklist
- Hot start (left)
- Clear failure

____ Before take-off checklist
- Engine fire (left)
- Evacuate?
- Clear failure

____ Climb checklist
- MLG bay overheat
- Clear failure

____ Cruise FL330
- Engine failure
- Clear failure
- FMS direct to SUZYQ
- Cargo fire (do not clear)
- Diversion
- Smoke in cabin
- Declare emergency
- Evacuate?
- Land ILS9R KORD
- FL330

____ Descent check
____ Approach check
____ Before landing check
____ Evacuation checklist

	Dual FTD	Total FTD
Previous		
This Lesson		
Total		

COMPLETION STANDARDS

The student will have demonstrated their knowledge of each task.

Instructor _____ Student _____ Date _____

CRJ-200 LESSON 6—HYDRAULIC AND PRESSURIZATION (Reposition KDEN)

OBJECTIVE: Familiarize the students with the hydraulic and pressurization system and reinforce prior systems knowledge.

TIME: 2 hours

PREFLIGHT BRIEF

____ Hydraulic safety policy

____ Hydraulic systems 1 and 2

- ACMP (AC motor pumps) Auto/On/Off
- Generator failure
- Hydraulic SOV's
- Accumulators and reservoirs
- Cooling

____ Hydraulic system 3

- ACMP 3

____ Controls and EICAS indications

- Hydraulic synoptic pages

____ Heat exchanger and cooling fan

____ Cabin pressurization central systems

- Auto vs. manual
- Outflow valves
- AP
  - 8.33 PSID normal
  - 8.6 PSID max
  - -0.5
- Aircraft altitude vs. cabin altitude
- "Ener Depress"

____ Flight deck safety check

- APU INOP

____ Before start check

- FMS flight plan

KDEN DEPART RWY 8—PLAIN4.HCT (HAYES CENTER TRANSMITTING) J60.LNK.KDBQ ILS36 FL330

____ Cleared to start checklist

- Air cart start
- Why start #2 engine first?

____ After start check

____ Taxi check

- Change to runway 17R

____ Second engine start

- Crossbleed
- ATC notify

____ Before take-off check

____ Climb check

- EDP1 fail
- Diversion

____ Auto pressure controller 1 failure

____ Auto pressure controller 2 failure

- Manual control of pressurization

____ Left duct leak 19th stage

- QRH
- Diversion

____ Descent checklist

____ Approach checklist

____ Before landing checklist

____ After landing checklist

____ Shutdown checklist

	Dual FTD	Total FTD
Previous		
This Lesson		
Total		

COMPLETION STANDARDS

The student will have demonstrated their knowledge of each task.

Instructor _____ Student _____ Date _____

CRJ-200 LESSON 7—FLIGHT DECK INSPECTION CHECKLIST AND FUEL PANEL

OBJECTIVE: Familiarize the students with the flight deck inspection (MSP to DBQ).
TIME: 2 hours

PREFLIGHT BRIEF

____ Preflight briefing
- Review establishing power to aircraft
- CFM chapter 4
- When to do a flight deck inspection checklist
  - FFOD, first flight of day
  - Crew aircraft change
  - Aircraft status in question
- Walk around/external checks (excel program)
- Before start check and CFM chapter 4
- Fuel panel

____ Flight deck safety check
- Low battery, less than 22 volts
- APU available

____ FFOD
- Run expanded checklist
- FMS load a flight plan

____ Before start

____ Cleared to start
- N_2 stagnation

____ After start

____ Taxi check

____ Second engine start

____ Before take-off check

____ Climb check

____ Left engine fire
- Cross flow pump fire
- Fuel imbalance
- Diversion

____ Descent checklist

____ Approach checklist

____ Before landing checklist

____ After landing checklist

	Dual FTD	Total FTD
Previous		
This Lesson		
Total		

COMPLETION STANDARDS

The student will have demonstrated their knowledge of each task.

Instructor _____ Student _____ Date _____

CRJ-200 LESSON 8—NAVAGATION ALERTS

OBJECTIVE: Familiarize the students with TCAS, RADAR, and the seven different modes of the EGPWS.
TIME: 2 hours

PREFLIGHT BRIEF

____ TCAS

- TCAS vs. TIS
- RTU
- Traffic Advisories
- Resolution advisories
- Aural warning
- NTSB 830
- ATC considerations

____ EGPWS

- Mode 1: Excessive rate of descent
- Mode 2: Excessive terrain closure rate
- Mode 3: Altitude loss after take off
- Mode 4: Unsafe terrain clearance
- Mode 5: Below glideslope
- Mode 6: Callouts
- Mode 7: Windsheer

____ RADAR

- Tilt
- Gain
- Range
- MFD using terrain and radar
- Ground clutter
- Attenuation
- Reflectivity
- MEL considerations if weather forecasted for your trip

Position at the end of the runway (KDEN) if all other areas up to this point are satisfactory.

____ EGPWS

Mode 3: Altitude loss after take-off

- Normal take-off and start a descent

Mode 4: Unsafe terrain clearance

- At KDEN turn to 270 at 10,000'
- Terrain on MFD

Mode 1: Return back to KDEN

- Descent rate (3000 EPM) to 7000'

Mode 5: Position for an ILS

- Soft GS warning
- Hard GS warning
- Mode 6: Callouts

Mode 7: Normal take-off

- Windsheer

____ TCAS

- Normal take-off
- Climb 10,000'
- Show different traffic scenarios
  - Climbing traffic
  - Crossing traffic
  - Descending traffic

RADAR

____ Enroute weather along a course

- Demonstrate RADAR controls
- Decision making
- Dispatch/fuel concerns
- Diversions

	Dual FTD	Total FTD
Previous		
This Lesson		
Total		

COMPLETION STANDARDS

The student will have demonstrated their knowledge of each task.

Instructor _____ Student _____ Date _____

CRJ-200 LESSON 9—REVIEW FOR FINAL

OBJECTIVE: Give the student an overall review to imitate the final exam.
TIME: 2 hours

PREFLIGHT BRIEF

- Systems areas needing reinforcement
- Ask questions from oral test bank

____ Flight deck safety check (fail, APU)

____ Before start checklist

- FMS
- KCID.DBQ.BAE.Polar3KDTW
- FL150 / 45 PAX / 7570 Fuel / 1140 Cargo

____ Cleared to start checklist (Aircraft)

____ After start checklist

____ Taxi checklist

____ Second engine start check

- Hot start

____ Before take-off check

____ Climb check

____ IDG fault

- QRH
- Diversion

	Dual FTD	Total FTD
Previous		
This Lesson		
Total		

COMPLETION STANDARDS

The student will have demonstrated their knowledge of each task.

Instructor	Student	Date
_____	_____	_____

CRJ 200 FINAL EXAM (ORAL) 60 pts.

____ What stage of engine air is used to supply air to packs?

____ What is the limitation when operating at the gate with only DC power supplying the aircraft and why?

____ Can we start the APU while at FL340?

____ We need AC power to start the APU. True or False

____ What is the maximum number of passengers allowed on the forward entrance door at one time?

____ What is the priority logic for AC Bus1?

____ What is the KVA rating for the APU IDG?

____ Can you reset a IDG in the air if you disconnected it?

____ Under what conditions will continuous ignition be used for?

____ How many duplex fuel injectors are there?

____ The thrust reversers use 10th stage bleed air. True or False

____ I do not have any CO_2 bottles to inflate my life vest. Is there another way to inflate it?

____ What is a squib? Describe.

____ We can use the APU Halon bottle for the engines. True or False

____ In the event of total electrical failure the ADG will still power pump 3A. True or False

____ The stabilizer has two motors, both of which run at the same time for redundancy. True or False

____ To read the magnetic level indicators the aircraft must have AC power on. True or False

____ After refueling with 14,000 lbs. of fuel, it is recommended to open the over wing caps and inspect the tanks. True or False

____ The right outboard brake is normally powered by which system?

____ IDG 2 powers which pump?

____ Describe how the operating principle of how the ice detector knows if there is ice.

____ While flying at FL340 we see an abnormal condition with the aircraft. Is there a way to mark the event for maintenance?

____ How do you know if the brake discs are within limits?

____ What is the maximum speed for gear extension?

____ What is the maximum speed for gear retraction?

____ ATC just asked you to maintain FL390 for traffic. Will you accept the clearance?

____ Your ground personnel just handed you a cargo load slip with 3400 lbs. of freight and 15 bags. Is this allowed?

____ While doing your walk around inspection how will you know if the oxygen bottle was over pressurized?

____ What are the sources for 10th stage air?

____ You can fill the galley and lavatory potable tanks from one fill valve. True or False

CRJ 200 FINAL EVALUATION (90 pts)

____ The aircraft is sitting on a remote ramp with no external power available.

____ Flight deck safety check

____ Before start checklist

- KMSP 12R.RST4.RST.DBQ.ILS36.KDBQ

____ Cleared to start checklist

____ After start checklist

____ Taxi checklist

____ Second engine start

- Hot or N_2 stagnation start

____ Before take-off check

____ Climb check

____ Engine fire

- QRH

EXAM SCORES

____ Oral exam (60 total)

____ Simulator evaluation (90 total)

____ Final exam total points (150 combined)

	Dual FTD	Total FTD
Previous		
This Lesson		
Total		

COMPLETION STANDARDS

The student will have demonstrated their knowledge of each task.

Instructor	Student	Date
_____	_____	_____