(a) Structure and Characteristics, Both Vertical and Horizontal.
(b) Frontal Types.
(c) Frontal Weather Flying.
(15) Theory of Storm Systems:
(a) Thunderstorms.
(b) Tornadoes.
(c) Hurricanes and Typhoons.
(d) Microbursts.
(e) Causes, Formation, and Dissipation.
B. Weather, Analysis, and Forecasts
(1) Observations:
(a) Surface Observations.
(i) Observations made by certified weather observer.
(ii) Automated Weather Observations.
(b) Terminal Forecasts.
(c) Significant En route Reports and Forecasts.
(i) Pilot Reports.
(ii) Area Forecasts.
(iii) Sigmets, Airmets.
(iv) Center Weather Advisories.
(d) Weather Imagery.
(i) Surface Analysis.
(ii) Weather Depiction.
(iii) Significant Weather Prognosis.
(iv) Winds and Temperature Aloft.
(v) Tropopause Chart.
(vi) Composite Moisture Stability Chart.
(vii) Surface Weather Prognostic Chart.
(viii) Radar Meteorology.
(ix) Satellite Meteorology.
(x) Other charts as applicable.
(e) Meteorological Information Data Collection Systems.
(2) Data Collection, Analysis, and Forecast Facilities.
(3) Service Outlets Providing Aviation Weather Products.
C. Weather Related Aircraft Hazards
(1) Crosswinds and Gusts.
(2) Contaminated Runways.
(3) Restrictions to Surface Visibility.
(4) Turbulence and Windshear.
(5) Icing.
(6) Thunderstorms and Microburst.
(7) Volcanic Ash.

III. Navigation
A. Study of the Earth
(1) Time reference and location (0 Longitude, UTC).
(2) Definitions.
(3) Projections.
(4) Charts.
B. Chart Reading, Application, and Use.
C. National Airspace Plan.
D. Navigation Systems.
E. Airborne Navigation Instruments.
F. Instrument Approach Procedures.
(1) Transition Procedures.
(2) Precision Approach Procedures.
(3) Non-precision Approach Procedures.
(4) Minimums and the relationship to weather.
G. Special Navigation and Operations.
(1) North Atlantic.
(2) Pacific.
(3) Global Differences.

IV. AIRCRAFT
A. Aircraft Flight Manual.
B. Systems Overview.
(1) Flight controls.
(2) Hydraulics.
(3) Electrical.
(4) Air Conditioning and Pressurization.
(5) Ice and Rain protection.
(6) Avionics, Communication, and Navigation.
(7) Powerplants and Auxiliary Power Units.
(8) Emergency and Abnormal Procedures.
(9) Fuel Systems and Sources.
C. Minimum Equipment List/Configuration Deviation List (MEL/CDL) and Applications.
D. Performance.
(1) Aircraft in general.
(2) Principles of flight:
(a) Group one aircraft.
(b) Group two aircraft.
(3) Aircraft Limitations.
(4) Weight and Balance.
(5) Flight instrument errors.
(6) Aircraft performance:
(a) Take-off performance.
(b) En route performance.
(c) Landing performance.

V. Communications
A. Regulatory requirements.
B. Communication Protocol.
C. Voice and Data Communications.
D. Notice to Airmen (NOTAMS).
E. Aeronautical Publications.
F. Abnormal Procedures.

VI. Air Traffic Control
A. Responsibilities.
B. Facilities and Equipment.
C. Airspace classification and route structure.
D. Flight Plans.
(1) Domestic.
(2) International.
E. Separation Minimums.
F. Priority Handling.
G. Holding Procedures.
H. Traffic Management.

VII. Emergency and Abnormal Procedures
A. Security measures on the ground.
B. Security measures in the air.
C. FAA responsibility and services.
D. Collection and dissemination of information on overdue or missing aircraft.
E. Means of declaring an emergency.
F. Responsibility for declaring an emergency.
G. Required reporting of an emergency.
H. NTSB reporting requirements.

VIII. Practical Dispatch Applications
A. Human Factors.
(1) Decisionmaking:
(a) Situation Assessment.
(b) Generation and Evaluation of Alternatives.